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THE LAPTOP INITIATIVE: FACULTY AND PRESERVICE TEACHERS' PERSPECTIVES ON TEACHING PRACTICES AND THE LEARNING ENVIRONMENT

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THE LAPTOP INITIATIVE: FACULTY AND PRESERVICE TEACHERS' PERSPECTIVES ON TEACHING PRACTICES AND THE LEARNING ENVIRONMENT

by

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In the Name of Allah, the Most Gracious, the Most Merciful

This work is dedicated to

My parents who have always appreciated the value of education

My wife, son and daughter who have sacrificed so much

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In recent years, institutions of higher education have begun to invest heavily in dynamic technological change by creating environments in which both faculty and students use their own laptop computers inside the classroom. Among the early initiatives by higher education institutions to require the use of laptops by faculty and students in classrooms is the Laptop Initiative for Future Educators (LIFE) in the College of Education at the University of Texas at Austin. This study sought to understand faculty and preservice teachers' perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment after the initial two years of implementation. Faculty and preservice teachers responded to a web-based survey that included quantitative and qualitative items and was designed based on the Chickering & Gamson's Seven Principles of good teaching practices.

Findings indicated that faculty perceived the impact of the Laptop Initiative on teaching practices and the learning environment more favorably than did preservice teachers. While faculty perceptions were slightly positive of the impact of the Laptop Initiative, preservice teachers expressed almost neutral views for most principles. In addition, data showed that preservice teachers with more experience of learning with laptops expressed a more positive perception of the impact of the Laptop Initiative than did preservice teachers who had less experience. The study respondents indicated that positive aspects of the use of laptop computers included: convenience, help in planning courses and doing assignments, ease in conducting research, ease of online communication, improvement in note taking by students and help in staying organized. Issues and concerns raised by some faculty and preservice teachers included: the potential of laptops to distract students during lectures, lack of effective utilization in some classrooms, the need for more training and additional technical support, and the cost of the computers. The findings of the study suggest several improvements could be made based on faculty and preservice teachers perceptions. Limitations concerning the methodology and results of the study and suggestions for improvement of the Laptop Initiative and for future research are provided.

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CHAPTER 1

INTRODUCTION

Background of the Study

The same technologies that shape the world today are rapidly entering the educational arena. The explosion of the use of technology in virtually every facet of society has created pressure in higher education to incorporate various technologies in teaching and learning environments. According to Bates (2000), there are numerous reasons why many higher education institutions have adopted computer technologies. These reasons include: (1) to improve the quality of teaching; (2) to provide students with technological skills for work and life; (3) to widen access and increase flexibility; (4) to reduce costs; and (5) to respond to the current technological imperative. At the same time, the use of technology introduces new challenges to institutions of higher education (Daniel, 1996).

Certainly, technologies have already been integrated into instruction and have been used to improve the quality of teaching in higher education (Cassidy, 2004; Bates, 2001; Bures, Abrami & Amundsen, 2000; West, 1999; Johnston & Cooley, 2001). In addition, it has been shown that effective use of technology allows greater efficiency and innovation in education (Cassidy, 2004; Bates 2000; Bates & Poole, 2003; Brown & Petitto, 2003; Daniel, 1996; Roblyer 2003; Lever-Duffy et al, 2003). With higher education institutions responding to the technological challenge and adapting to various student needs and expectations through an increased use of technology, it is clear that technology is already changing the way colleges and universities operate. Schank (2000) noted that technology is already deeply changing education, changing classroom interactions, the students themselves and their learning environments.

Computers are powerful products of the technological revolution and have greatly affected the delivery system of education in academia. Computers have become standard equipment in higher education institutions and there is considerable agreement that computer technology has enormous potential for promoting student achievement.

A review of prior research shows that computer technologies have been viewed as an important educational tool and will continue to enhance the learning process (i.e., Dean, 2000; Snyder, 1995; Thorpe, 1997; Anderson, 2001; Bauer, 2003).

In recent years, institutions of higher education have begun to invest heavily in dynamic technological change by creating environments in which both faculty and students use their own laptop computers inside the classroom (Lowry, 2001). A list compiled by Brown (2004), with the latest update being July 2004, showed that there are about 170 colleges and universities in the United States and Canada that have configured some type of laptop program. This number is increasing, as new higher education institutions are joining in. This increase in the implementation of laptops has led to a need to understand their instructional use in order to improve use and make it most effective. Prior research on the impact of laptop computers showed a positive impact on students and faculty. In one study, the majority of students reported that using a laptop and its related resources enhanced their learning and improved their communication with instructors and fellow students. Also, most faculty members indicated that using laptops

helped them incorporate active learning activities (Lord & Bishop, 2001). Another study by Sargeant (1997) showed that faculty perceived significant changes in the way they teach because they were actively involved in developing curricular materials in order to take advantage of the technology. In addition, students felt that laptops and network resources were used effectively by their instructors and changed the way in which they learn (Hanson, 1998). Kariuki (2000) stressed that using the laptop provided pre-service teachers with a wealth of resources, opportunities and challenges. According to Kariuki (2000), having the laptop “gave the student a unique opportunity to advance themselves in ways that may never have come their way otherwise” (p. 109). An assessment study that was conducted at Seton Hall University (2001) revealed that students were generally satisfied with the laptop computing program and generally perceived a positive impact from laptop technology on their teaching and learning environment. Furthermore, Anderson (2001) found that students endorsed the use of laptop computers because of convenience, ease of communication and greater ability to conduct research.

Among the early initiatives by higher education institutions to require the use of laptops by faculty and students in classrooms is the Laptop Initiative for Future Educators (LIFE) in the College of Education at the University of Texas at Austin. In fall 2002, the Laptop Initiative was established at the College of Education and all students seeking teaching certification were required to have laptop computers, and this initiative continues to the present. In addition to laptop computers, the College of Education is wired to provide Internet access (College of Education [COE], 2004). Under the Laptop Initiative program, each laptop computer is required to have specific hardware capabilities, such as Internet and common set of software programs, and Apple Macintosh was selected as the supported platform (Model: Apple iBook or Powerbook). In order to prepare faculty and future teachers for using laptop computers, the faculty in the teacher preparation programs have revised (and continue to revise) the curriculum to integrate technology into best educational practices. In addition, students receive special training at the beginning of the semester to help them maximize their use of laptop computers in classes and field

experiences (COE, 2004).

The College of Education expects that the Laptop Initiative may bring “fundamental change to the teacher preparation program in the college of education” (Learning Technology Center [LTC], 2003). Faculty members take advantage of the initiative by planning their curriculum to incorporate computer usage. On the other hand, students are expected to “conduct extensive use of Internet instructional resources, to use electronic publishing and data management, to develop and use multimedia materials, and to work with interactive video clips of classroom activity. The laptop computers will also be used for communication with faculty, peers, and school teachers from home, campus classrooms, and field sites in the public schools” (COE, 2004).

Under the title, “*Why the Laptop Initiative*”, the COE website explains that prospective teachers need to be skillful in the use of technology for instruction since it has been found through pilot programs that the use of laptop computers “make[s] future teachers much better prepared for integrating technology into instructional practice.” Also, laptop computers are effective tools for

teaching and learning because they “enable teachers to collect student data, capture and display multimedia images, communicate electronically with others, capitalize on the rich resources available on the Internet, build electronic portfolios, do web and desktop publishing, and teach students to use technology as they learn.”

According to the College of Education website (2004), the major goal of implementing the Laptop Initiative is to enhance learning in technologically-rich classrooms. Specifically, eight goals are highlighted by the College of Education. These goals are: “(1) seamlessly integrate technology standards throughout PDS curriculum and in field experiences; (2) ensure and maintain a state-of-the-art technology integration program and infrastructure; (3) secure resources to facilitate the continued implementation and evaluation of technology integration; (4) establish strong partnership with local school districts in our efforts to integrate technology and to support technology integration into our students’ novice teaching experiences; (5) establish networks for inclusion of all teacher preparation programs and the Principalship program; (6) foster faculty-ownership of initiative [and] build capacity

so that faculty members drive integration; (7) build a virtual community of practice for faculty, preservice students and induction teachers," and "(8) demonstrate and disseminate the positive impact of the program."

As noted, prior research showed that the laptop computing has the potential to improve classroom instruction in meaningful ways. However, we need to know how this potential can be realized. Faculty and students can provide valuable insights by describing their practices and explaining their perceptions regarding teaching and learning with laptop computers. To be sure, the Laptop Initiative involves more than providing faculty and students with laptop computers, wireless Internet access and software. In fact, it is an effort to ensure that incoming preservice teachers are well prepared and positioned to take full advantage of advanced learning opportunities and to achieve a competitive edge in the workplace. If we assume that the Laptop Initiative will help improve teaching practices and the learning environment, then we need to understand the positive or negative impacts that may occur. As we have seen, only few studies have dealt with such an important issue. More

studies are needed in order to understand the influence of such an innovation on teaching and learning. It is hoped that this study will contribute to the body of knowledge and shed some new light on the experience of laptop computing in higher education.

Purpose of the Study

The use of laptops in classroom instruction in higher education is a relatively new innovation for which there is limited information about the experiences and perceptions of faculty and students. This study, therefore, seeks to understand faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment.

Research Questions

To provide a better understanding of faculty members' and preservice teachers' experience concerning the Laptop Initiative, the following research questions will guide this study:

(1) What are faculty members' perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment?

(2) What are preservice teachers' perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment? and,

(3) What are the similarities and differences in the perceived impact on teaching practices and the learning environment between faculty members and preservice teachers?

To develop assertions that address the research questions and explore faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment, a survey was designed based on Chickering & Gamson's (1987) work that identified seven key instructional practices that have been found to influence teaching and learning environments. Called the "Seven Principles for Good Practice in Undergraduate Education," these practices have been explored and validated in numerous studies (Gamson, 1991). According to Chickering & Gamson (1987), good practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages active learning; (4) provides prompt feedback; (5) emphasizes time on task;

(6) communicates high expectations; and (7) respects diverse talents and ways of learning. A description of each principle with specific instructional practices, as well as related findings in the literature, will be discussed in Chapter Two of the dissertation.

Significance of the Study

The College of Education is investing heavily in computer and network technologies to support instruction. Proponents of these technologies suggest that they can encourage faculty productivity, improve teaching practices and the learning environment and broaden information access. In addition, many educational leaders foresee laptop computers and network technologies altering the way higher education institutions operate by permitting new and different organizational structures, delivery systems and learning environments. Certainly, studies that aid in understanding faculty and student perspectives of the impact of the Laptop Initiative will contribute valuable information to the body of knowledge concerning the infusion of technology into teacher preparation programs.

Specifically, the findings of this study can be helpful in making effective funding and design decisions concerning future investment in one-on-one computing. Also, it is believed that the study findings could benefit universities in their efforts to advance the use of laptops in various colleges and attract more faculty members to use laptops in their teaching. It will also help the College of Education modify and improve training programs for the Laptop Initiative so that they consider faculty and preservice teachers' views of the impact of laptop computers. Finally, it is hoped that the findings of this study will benefit faculty members themselves by informing teaching practices within the teacher education program.

Definition of Terms

Terms used in this study are defined as follows:

The Professional Development Sequence (PDS). The final two, three or four long semesters of the academic degree program leading to teaching certification from the University of Texas at Austin. During the PDS semesters, preservice teachers spend increasingly longer periods of time in schools, while still taking required academic

courses that include methods and classroom management courses (COE, 2004).

The Laptop Initiative for Future Educators (LIFE). A bold technology program for the professional development sequence in which all students seeking teaching certification are required to have laptop computers. The major goal of implementing the Laptop Initiative was to enhance student learning in technologically-rich classrooms (COE, 2004).

The Seven Principles. Principles of good teaching practices based on the view of education as an active, cooperative and demanding experience which “encourages contact between students and faculty; develops reciprocity and cooperation among students; encourages active learning; gives prompt feedback; emphasizes time on task; communicates high expectations; and respects diverse talents and ways of learning” (Chickering & Gamson, 1987, p. 3).

Faculty. Full time tenured and non-tenured professors employed by the College of Education at the University of Texas at Austin to teach courses in the Professional Development Sequence.

Preservice Teachers. Individuals who receive training in the Professional Development Sequence at the College of Education at the University of Texas at Austin.

Technology Integration. Integration of technology in the development of the curriculum and in the instructional process.

Laptop computer. A "small, standalone, portable personal computer system" (Roblyer, 2003, p.359).

Limitations of the Study

This study is limited to faculty members and preservice teachers at one higher education institution and the results might not be generalizable to other settings. In addition, the study is based on self-reported perceptions by faculty and preservice teachers and is not a direct measure of their assessment of the impact of the Laptop Initiative. Thus, the study assumes that participants report their perceptions truthfully and accurately.

Organization of the Study

This dissertation study is comprised of five chapters. The first chapter is an introduction to the study,

describing the nature of the research within its contextual background. This chapter also states the research purpose and questions, the justification of the study and useful definitions.

The second chapter is a review of literature in the field. It begins with an overview of the benefits and challenges of technology integration with a focus on technology integration in teacher education programs. Then it offers information about laptop initiatives, including history, models, scope, benefits, challenges and lessons learned. It also reviews the literature on the impact of laptop technology on teaching and learning environment in higher education. The chapter ends with a discussion of each principle of Chickering & Gamson's "Seven Principles for Good Practice in Undergraduate Education," which was used to develop the instrument of the study.

The third chapter describes the methodology of the study. It begins with an overview of the research methodology used for this study followed by a description of the study sample and respondents. A summary of the procedures used to develop and test the survey instrument is presented next. Chapter Three also explains the specific

procedures for collecting and analyzing the study data. The chapter ends by outlining specific ethical considerations that have guided this study.

The fourth chapter presents the results of data analysis and the study findings on the impact of the Laptop Initiative as related to the Seven Principles of effective teaching. The chapter begins by describing the response rate and demographic characteristics of the sample. After that, it presents findings for each research question in tabular form and accompanied by a brief description.

The fifth chapter presents a summary of the study and conclusions drawn from the data analysis and the study findings. The chapter also provides a discussion of findings and recommendations for practice and future research.

CHAPTER 2

LITERATURE REVIEW

Overview

In general terms, the infusion of laptop computers in teacher education programs is an attempt to introduce technology into teaching practices and the learning environment. It is therefore important to discuss the use of technology in education in general in order to understand the wider picture and put this study in perspective. Consequently, this chapter begins with an overview of the benefits and challenges of technology integration with a focus on technology integration in teacher education programs. Then it offers information about laptop initiatives and related history, models, scopes, benefits, challenges and lessons learned. It also reviews the literature on the impact of laptop technology on teaching practices and the learning environment in higher education. The chapter ends with a discussion of

each principle of Chickering & Gamson's "Seven Principles for Good Practice in Undergraduate Education," which was used to develop the instrument for this study.

The explosion in the use of technology in virtually every facet of society has created a pressure on higher education institutions to incorporate computers, communication technologies and other cutting edge techniques. Levine (1997) stressed that the rise of new technology is an important force that is propelling higher education. He states, "Technology is available with the capacity to fundamentally change the nature of college instruction" (p. 15).

In order to take full advantage of technology in teaching and learning, institutions of higher education need to assess and improve the way technology is used. One way to do that is to investigate the impact of technology integration on teaching practices and the learning environment. Although the number of research studies that deal with technology integration issues has grown rapidly over the past years as more and more schools have begun to invest heavily in technology, much of the research found on technology has considered the K-12 arena. The review of

literature in this chapter focuses mostly on studies that deal with technology integration at the level of higher education.

To understand the impact of technology integration on teaching practices and the learning environment, one needs to define technology integration and discuss the importance of integrating technology as a teaching and learning tool. According to the National Center for Education Statistics (2003), technology integration is “the incorporation of technology resources and technology-based practices into the daily routines, work, and management of schools. Technology resources are computers and specialized software, network-based communication systems, and other equipment and infrastructure. Practices include collaborative work and communication, Internet-based research, remote access to instrumentation, network-based transmission and retrieval of data, and other methods.” In addition, Dockstader (1999) defined technology integration as:

- “using computers effectively and efficiently in the general content areas to allow students to learn how to apply computer skills in meaningful ways”;

- “incorporating technology in a manner that enhances student learning”;
- “using software supported by the business world for real-world applications so students learn to use computers flexibly, purposefully and creatively”;
- “having the curriculum drive technology usage, not having technology drive the curriculum”; and
- “organizing the goals of curriculum and technology into a coordinated, harmonious whole.”

Why Integrate Technology?

The need to integrate computer technologies into the classroom is justified by the benefits to both students and faculty. The literature on technology integration in education and specifically in teacher education preparation programs revealed several benefits of incorporating technology into teaching and learning practices. As can be seen from the review that follows, the potential of technology to positively impact teaching practices and the learning environment has increased and become very powerful. Keiper, Harwood & Larson (2000) identified five

benefits of using computer technology in the teacher education classroom:

First, data collection. Preservice teachers use computers to aid in collecting information for instruction, such as lesson plans, databases and resources for teaching about particular academic content. Also, computer technology and the Internet provide access to global libraries, museums, research and cultural resources. In other words, computer technology exposes faculty and students to information and educational sources that are virtually infinite (Roblyer & Edwards, 2003).

Second, improved student computer skills. In using computer technology, students learn technology related skills toward gainful employment, such as keyboarding skills, problem solving, awareness of software programs and increased confidence in using computers. According to Keiper, Harwood & Larson (2000), “the development of computer skills was perceived as an intellectual benefit that was learned in addition to the actual course content” (p. 573).

Third, dynamic sound and images. Computer technology makes lessons exciting for both teacher and students

through the use of dynamic sounds and images, such as video clips, sound files, photographs, maps, graphics and graphs. Such excitement increases students' motivation to learn by helping gain their attention and engagement (Dockstader, 1999; Roblyer & Edwards, 2003). Mehlinger (1996) noted that learners "did not become bored over time; instead, the desire to use [computer technology] for their own purposes increases with use" (p. 404).

Fourth, instructional variety. The use of computer technology provides teachers with a tool to instruct students through multiple modes of instruction. In other words, "the content of a lesson might be provided several ways because of a computer" (Keiper, Harwood & Larson, 2000, p. 573). In addition, technological tools not only help simulate real life experiences but they also allow learners to create visualizations of abstract concepts, activities which were not possible before (Jonassen, Peck & Wilson, 1999). This helps foster higher level thinking skills and enhances problem-solving abilities because students are actively involved in the construction of their learning. Thus, technology provides unique instructional capabilities that were not possible without technology

(Roblyer & Edwards, 2000; Dockstader, 1999; Milman & Heinecke, 2000; White, 1999).

Fifth, communication tool. The use of computer technology provides teachers with opportunities to use the Internet for e-mail, chat rooms, threaded electronic discussions and a class Listserv in their instruction. Juliano (1997) describes the use of technology in the classroom as “power pedagogy.” He provides several examples of communication activities that are made possible with the application of technology, such as private newsgroups, email collaboration among students and between students and faculty, email submission and critique of assignments, teleconferencing and Internet-based lab work.

Sixth, instructor productivity. Another benefit of integrating computer technology in the classroom is an increase in instructor productivity. According to Roblyer & Edwards (2003), instructors can become more productive because technology save their time preparing and organizing for classes and offers them quick access to resources. A study by Falba et al. (2001) reported that the use of technology such as laptop computers is useful and can promote and enhance teachers’ technological skills. The

study showed that teachers see beneficial uses of laptop computers related to individual teacher growth and professional productivity.

A discussion of the benefits associated with the use of technology would not be complete without a look at the challenges and obstacles as well. The next section describes some obstacles and barriers to the use of technology as reported in the literature.

Challenges and Obstacles to Technology Integration

Changing the culture of higher education teacher preparation programs is not an easy task. Challenges and obstacles to change continue to proliferate in faculty and student utilization of technology (Albright, 1996). These challenges range from availability of technology and time constraints to insufficient administrative support. In a study of 58 preservice teachers in elementary and secondary social studies methods courses, Keiper, Harwood & Larson (2000) identified four obstacles to using computer technology in the classroom:

First, accessibility. According to Keiper, Harwood & Larson (2000), the lack of access to computer technology

limited preservice teachers' use of computer technology in instruction. Some of the issues raised by preservice teachers were number of computers, age of hardware and software, or Internet connection. Research shows that the lack of access to technology is an obstacle to effective technology integration (Johnston & Cooley, 2001; Wang & Holthanus, 1997).

Second, differing ability levels. In Keiper, Harwood & Larson's study, preservice teachers reported that there was a wide range of student and teacher ability with regard to computer skill levels. There were situations in which preservice teachers felt intimidated by their students' computer skills and did not want to feel inadequate or lacking, and therefore did not use technology. In addition, the study indicated that preservice teachers had difficulty dealing with the logistics of managing a group of students with varying levels of computer ability.

Third, dependability. Preservice teachers also reported that the fear of equipment failure, such as the Internet disconnecting in the midst of teaching, was an obstacle to using computer technology.

Fourth, supervision of students. Preservice teachers reported that part of their focus during a lesson using the Internet was diverted by the need to constantly monitor and deter students from navigating inappropriate websites.

The literature revealed other challenges and obstacles to technology integration, including:

Training & technical support. The lack of adequate training or support in computer use is an additional barrier to technology integration. In a study of eight higher education faculty members, eight K-12 teachers and 122 preservice teachers on facilitating a constructivist vision of technology integration, Vannatta & Beyerbach (2000) stated that higher education faculty training was a crucial component to developing technology savvy preservice teachers. In addition, professors indicated that technical support was key to integrating technology into their courses (Johnston & Cooley, 2001).

Time. The lack of time to find resources, prepare teaching materials and participate in training programs is found in the literature to be another significant barrier to the effective integration of technology in teaching (Johnston & Cooley, 2001; Keiper, Harwood & Larson, 2000).

Lack of skill & knowledge. Faculty and preservice teachers' lack of skill for implementing a program or monitoring effectiveness of integration, and their inability to assess students' computer capabilities and provide remedial computer instructions are major barriers to integration of computer technology as a pedagogical tool (Keiper, Harwood & Larson, 2000).

Individual resistance to change. This is a common barrier in any change process and can be overcome by communication and support (Virginia Department of Education, as cited in Johnston & Cooley, 2001).

Technology in Teacher Education Programs

As explained earlier, a key benefit of technology integration is to enhance teaching and learning. Since this study deals with a specific population: faculty and students at a teacher preparation program in a particular higher education institution, this section explores how the benefits of using technology can be achieved in teacher education programs. It focuses on some guidelines and suggestions that may improve the use of technology in teacher education programs.

Despite evidence that the use of technology can enhance teaching and learning, teacher education programs have been slow to integrate technology into their programs. Some of the criticisms of the way teachers have been prepared to use technology over the past two decades include (Abdal-Haqq, 1995; Beck & Wynn, 1998; Cuban, 2001):

- Insufficient modeling by teacher education faculty and other university faculty,
- Minimum focus on higher level thinking skills and problem solving,
- Media and technology use that is concentrated in one or two courses rather than integrated throughout the curriculum,
- Teaching about technology rather than teaching with technology, and
- A rush to embrace the use of technology without paying attention to its negative effects.

Along with these criticisms come some very specific guidelines and recommendations for change and improvement. According to Larson (1995), the integration of technology into teacher preparation programs in higher education has been encouraged by several initiatives such as those by the

Association of Teacher Educators (ATE), and the American Association of Colleges of Teacher Education (AACTE). Some of the intended outcomes of the guidelines were for preservice teachers to demonstrate knowledge of the uses of computers for problem solving, information management, communications, presentations, and decision-making. Also, it recommended that preservice teachers understand the potential of technology to support instruction. Furthermore, preservice teachers need to understand issues of equity and ethical, legal, and human issues of computing and technology as they relate to society and should model appropriate behaviors (Larson, 1995).

From a slightly different point of view, Mason et al. (2000) offered a different set of suggestions and guidelines for effective use of technology in teacher preparation programs. These guidelines include:

1. Extend learning beyond what could be done without technology. Mason et al. (2000) cautioned against using technology for technology's sake. Rather, the introduction of technology should purposefully enhance learning. Teacher preparation programs should introduce technology in an environment in which skills and content are taught more

actively and meaningfully. One way to achieve this, as Mason et al. (2000) suggested, is to encourage students to use digital archives to enrich their lesson plans (i.e., students can conduct historical research to construct the significance of people and events in history). According to Mason et al. (2000), the use of digital archives by course instructors to engage students in historical inquiry, for example, allows preservice teachers to experience learning beyond what could be done without technology.

2. Introduce technology in context. According to Mason et al. (2000), the goal of introducing technology is not to make preservice teachers proficient at using technology but to make their teaching better than it would be without using it. Thus, “preservice instruction enabling teachers to integrate technology seamlessly into lessons is more productive than technology instruction that merely teaches preservice teachers how to use specific computer skills” (Mason et al., 2000).

3. Include opportunities for students to study relationships among science, technology, and society. Immersion of students into the computer culture brings up many questions about how to use this context to enhance

teaching and learning. Mason et al. (2000) stated that preservice teachers should be given the opportunity to study the pros and cons of using technology with students. The study should include but not be limited to issues such as accessing inappropriate sites, effects of technology on learning, the global effects of technology, engaging students in online behaviors and the effects of the digital divide on children.

4. Foster the development of skills and knowledge needed for effective participation as good citizens in a democratic society: Mason *et al*. (2000) argued that because of the interactive nature of the Internet, the teacher preparation classroom has the potential to revive the traditional notions of citizenship education.

According to White (1999), a technology integration model in teacher preparation programs should have the following objectives:

1. Provide experiences and expectations that help preservice teachers develop professionally.
2. Facilitate constructivism through modeling, applying, reflecting, involving students actively and developing a community of learners.

3. Develop problem solving and critical thinking skills.
4. Integrate transformative, non-traditional curricula.
5. Develop awareness and evaluate current use of technology in schools.
6. Apply packaged software during all preservice teacher education experiences.
7. Apply emerging technologies, including multimedia and telecommunications, during all preservice teacher education experiences.
8. Develop and apply lessons and units integrating technology.

To create a learning environment that integrates technology effectively, certain conditions need to be met. The International Society for Technology in Education (ISTE) defined several key conditions necessary to create learning environments that make effective use of technology. Table 1 lists these conditions as they appear in *Information and Communication Technologies in Teacher Education: A Planning Guide* edited by Paul Resta (2003).

Table 1

Essential Conditions for Implementing Information and Communication Technologies in Teacher Education

Shared Vision	There is proactive leadership and administrative support from the entire system.
Access	Educators have access to current technologies, software, and telecommunications networks.
Skilled Educators	Educators are skilled in the use of technology for learning.
Professional Development	Educators have consistent access to professional development in support of technology use in teaching and learning.
Technical Assistance	Educators have technical assistance for maintaining and using the technology.
Content Standards and Curriculum Resources	Educators are knowledgeable in their subject matter and current in the content standards and teaching methodologies in their discipline.
Student-Centered Teaching	Teaching in all settings encompasses student-centered approaches to learning.
Assessment	There is continuous assessment of the effectiveness of technology for learning.
Community Support	The community and school partners provide expertise, support, and resources.
Support Policies	School and university policies, financing, and rewards structures are in place to support technology in learning (ISTE, 2000).

As we have seen, one of the essential conditions for implementing technology in teacher education is access to the technology. According to Resta (2003), “technology should be accessible immediately when it is the best route to the information or tools needed by pre-service teachers, teachers, and students” (p. 74). One way to help increase access to technology is to use laptop computers in teacher education programs. In fact, many teacher education programs have already begun to use laptop computers and implement laptop initiatives as a way to improve teaching practices and the learning environment. The following section provides an overview of the benefits and challenges of laptop computers, the history of laptop initiatives, and various models, scopes and lessons learned. It also reviews the literature on the impact of laptop technology on teaching practices and the learning environment in higher education.

Overview of Laptop Initiatives

According to Belanger (2000), the organization of laptop programs in higher education dates back to 1988 when Drew University in Madison, New Jersey, began providing

laptop computers to all incoming freshman. Today, there are many higher education institutions that offer commonly configured laptop computers. A list compiled by Brown (2004), with the latest update being July 2004, showed that there are about 170 colleges and universities in the United States and Canada that have configured some type of laptop program. This number is increasing, as new higher education institutions are joining in.

Using laptop computers and implanting laptop initiatives in education has several benefits in addition to the general benefits of integrating technology into classroom teaching, which were described earlier. These benefits include ubiquity, mobility, flexibility, equity and standardization. A description of some benefits of using laptop computers and implementing laptop initiatives follows.

A key benefit of laptop computing is related to mobility and flexibility and how they affect teaching and learning environments. The space factor has been cited as one of the important benefits of laptop computers. A laptop can fit on a busy desk, under the arm or in a student’s backpack (Byers, 1991, as cited in Kariuki, 2000). Teachers

also reported the benefit of portability in the classroom, particularly when it comes to using the laptop for class presentations (Kontos, 2001).

In addition, students who have laptops and access them at any time can take advantage of what educators refer to as the “teachable moment.” According to Desmarais and Luther (1997), “this means that when the student is ready to learn, a key point in the instructional process, the computer and access to vast information resources are available” (p. 84). For example, students can access Internet educational resources and conduct research for specific information while visiting a museum. Instant access to information anytime and anywhere helps students develop motivation for learning (Desmarais & Luther, 1997; Bianchi, 2004).

Laptop Computers also help reduce cost and eliminate some hardware and software problems. According to Kontos (2002), when comparing laptop computing to desktop computing labs, institutions reduce cost and minimize problems of support and equitable access through standardization. In addition, using laptop computers eliminates some technical problems that occur when

designing student projects and activities, such as the problem of Mac versus PC, because all students have the same hardware/software. Thus, the task of teaching becomes easier (Kontos, 2002).

Additional important benefits of laptop computing are related to equity, time and access. According to Kontos (2002), laptop programs help solve the problem of excessive inequality among students since all students can work on the same hardware and software supported by the laptop. In addition, laptop computers help eliminate one of the key barriers to technology integration: the lack of time and access, which is described in the first section of the chapter. According to Falba et al. (2001), providing instructors with laptops is a way to meet such challenges of time and access. When instructors have convenient access to technology, they are able to find time to increase their skills and confidence.

However, the use of laptop computers and the implantation of laptop initiatives also pose some challenges that need to be addressed and discussed. According to the Node Learning Technologies Network (as cited in Kontos, 2002), some of the challenges associated

with laptop computers and laptop programs are: (1) financial challenges: laptop computers remain more expensive than desktop computers although this is changing; (2) size of laptop: small size does not mean comfort in computer use. The small keyboards and fine controls of laptop computers may also pose challenges for some students with certain disabilities; (3) theft: due to their small size and portability, laptop computers are easier to steal than desktops; (4) faculty workload: developing curricula and communicating with students in a laptop program environment tends to be more time consuming; (5) classroom management: network and e-mail availability in class may create problems such as online chatting and computer game playing; (6) access to online resources: although this can be seen as a benefit of laptop computing, it can also be seen as a negative. Students may not bother to visit the library because they expect to find everything online; (7) learning styles: some students find it difficult to adapt to the laptop program's different student-instructor relationship and the roles of each. In this model, the students must be responsible for their learning and the teacher becomes the facilitator of learning; and (8)

evaluation: evaluation methods need to be adjusted. In laptop programs, online exams are replacing traditional paper-and-pencil exams. Network availability during exams may increase students' likelihood of cheating.

Models & Scope of Laptop Initiatives

According to Kontos (2002), there are four models for implementing a laptop program: (1) required but not provided: setting a minimum standard or specifying a particular model of laptop and letting students make their own arrangements for purchase or lease; (2) provided by program: distributing laptops to students within a particular program or programs; (3) provided in phases: distributing laptops to all first-year students; and (4) provided in full: distributing laptops to an entire campus at once. Kontos (2002) explained that most institutions of higher education prefer model two, the program-based model, since managing a campus-wide laptop program is a much more difficult task.

Bauer (2003) looked at several laptop initiatives in higher education institutions and identified general components and variables that define the scope of these

institutions’ laptop initiatives. According to Bauer (2003), it is important for higher education institutions to consider these variables and answer the related questions based on the needs of faculty and students. Table 2 summarizes Bauer’s review of components and variables of laptop initiatives.

Table 2

Bauer's Components and Variables of Laptop Initiative Models

Components	Variables
Ownership	1. Will laptops be purchased, leased, or borrowed? 2. Is it the students' or institutions' responsibility to purchase/lease/borrow laptops? 3. Will the institution recommend and/or negotiate volume pricing with a single or multiple vendors?
Standards	1. Will laptops have a uniform configuration or will minimum standards be set? 2. Who will determine the configuration or set the minimum standards (the institution, the program, or the students)? 3. What are the platform, hardware, and software requirements? 4. Will upgrade options be available?
Access/Mobility	1. Which students will be provided with laptops (entering freshmen, students participating in a specific program, or all students)? 2. How will students have 24/7 access to the campus network and the Internet on-campus and off-campus (wireless network, hard wire connection, dial-in, etc.)?
Service/Support	1. Who will provide technical service and support (the institution or vendor)? 2. How will students access technical service and support? 3. Will students be provided with a loaner laptop while their laptop is being serviced or repaired? 4. Will there be a replacement cycle? If so, how often (every 4 years, 2 years, every year)?

Lessons Learned

While the effectiveness of laptop initiatives and laptop computing is well addressed in the literature, some scholars who have first-hand experience with laptop initiatives have raised several concerns and pointed out several lessons learned and suggestions for improvement (i.e., Resta et al., 2004, for lessons learned from laptop initiatives in higher education; and both Cook, 2002; and Bianchi, 2004, for lessons learned from laptop initiatives in K-12 education). In a recent study, Brown and Petitto (2003) identified 61 lessons learned from 13 higher education institutions with laptop initiatives, related to the issues of planning, technology, implementation and management, adoption and results. They also offered some suggestions to other institutions implementing laptop initiatives. Table 3 shows Brown & Petitto’s list of lessons and suggestions.

Table 3

Brown & Petitto's Lessons Learned

Lessons learned regarding planning	1. Don't lose sight of the ultimate goal: measurable improvement of education outcomes. Keep the focus on pedagogy, not technology. Remember that students are the center of the program: everyone else is important, but the program serves the students directly. Stay focused on the goal of enhanced student learning. 2. Clearly defined, defensible program objectives are essential. 3. Develop a comprehensive plan first and quickly match it with a multiyear financial plan. Establish a clear financial plan and budget and a mechanism for revising the budget annually. Include adequate startup and operating funds. 4. Demand for technology will increase much faster than anticipated. 5. Most sunk costs (for example, old computers) can be ignored. 6. Getting laptops to students is only 10% of the challenge; decisions about, and implementation of, policies, training, support, networking, exposure, and motivation remain ahead. 7. Recognize that user-friendly technology in the hands of dedicated faculty is the most powerful change instrument that any academic administrator has ever had. 8. Top executive support is essential. 9. The impact of computing on teaching and learning is difficult to assess objectively. 10. Disciplines use the computer in different ways, so a broad spectrum of faculty must participate in system design decisions.

Table 3 (continued).

Lessons learned regarding the technology itself	1. Reliability is crucial, esp. a robust network & trained help desk. 2. Standardize on hardware, software, and ISP at least at first. Standardization pays rewards well beyond those anticipated. 3. Pay attention to the logistics of distributing equipment: it's harder than you think. Laptop distribution is a major production: define each step and automate everything possible. 4. Don't accept the first bid from a vendor: the market is competitive, and vendors will improve their bids. Develop strategic partnerships rather than just buying from vendors. Choose a partner for the long haul. 5. Models and prices change fast: don't buy too early in the year and then be forced to deliver a discontinued model to your students, while they read ads in the newspaper for new machines at fire-sale prices. 6. Sign procurement contracts with major vendors specifying their responsibilities for delivery and for equipment that fails initially or repeatedly. 7. Technology will sometimes fail. 8. Have a structure for student repairs. 9. You can never have enough bandwidth to the Internet or network disk space. 10. One of the biggest financial challenges is what to do with laptops used for a semester or two and returned when a student withdraws or is dismissed. 11. The help desk must be close to classrooms. 12. Wireless is worth it: don't hesitate too long, and be complete with your wireless coverage.

Table 3 (continued).

Lessons learned on implementation and management	1. Professional project management is essential, especially during startup. 2. Be prepared to outsource challenges; consulting help is essential. 3. Use commercial course management software. 4. Spread the gains from, and ownership of, innovation throughout all units. Identify and incorporate existing assets before creating new ones. 5. Balance central services and local control. 6. Provide academic units staff of their own and plenty of equipment without hassle. 7. Put in place an ongoing faculty and student-led oversight mechanism to monitor and to adjust the program. Place some funds under faculty control. Apply academic review structures to the program. Don't let administrators have control of faculty development. 8. Understand the role of standards in the program, and obtain agreement on them from faculty and administration. 9. Ultimate responsibility should be given to a senior administrator with the authority to set directions and settle disputes. 10. Never underestimate the power of teamwork. 11. Involve parents as early as possible. 12. Hardware and software decisions are separable. 13. Communicate, communicate, communicate frequently with all stakeholders. 14. Manage expectations; they invariably outrun the capacity to deliver. Address faculty and student concerns truthfully, adequately, and quickly in order to quell rumors. Keep your admissions office informed. Regularly reconcile program descriptions in university publications with those on the Web. 15. High percentages of faculty will use the computer if their initial introduction involves only email, URL addresses, and course materials posted by a course management system.

Table 3 (continued).

Lessons learned regarding adoption of computer enhanced learning	1. Plan a Pilot Year to purge bugs when stakeholders will still tolerate imperfections. 2. Provide students and faculty just-in-time training that centers on the task-at-hand; general classes don't work well. 3. In a standardized environment, students learn basic computer skills quickly, without degree-credit incentives. 4. Standardization speeds faculty adoption and eases the pressure on support staff. 5. First encourage easily learned and administered uses of the computer by a high percentage of faculty; leave the more difficult and expensive uses of the computer until later 6. Early academic involvement and leadership is critical to success. 7. Make use of student expertise to support peers and faculty. 8. Student access to computing can vary even in a highly standardized environment. Students aren't all computer wizards. Some can be archly conservative. 9. Coordinate the technology program with existing programs for faculty development and training. 10. Continue, long after program launch, to provide faculty training. 11. Recognize that it's quite possible to launch an online course for less than $30,000. 12. Avoid minimum expectations about the amount and character of technology to be used in individual courses. 13. Find opportunities for faculty to showcase the results of their work. 14. Develop an intellectual-property policy that benefits both individuals and the university.

Table 3 (continued).

Lessons learned on results	1. Contact among students and between students and faculty becomes continuous 2. Students teach faculty, and friends serve as an informal help desk. 3. Co-Curricular activities thrive due to increased communication. Student groups are larger and more active. 4. Team assignments are more frequent and more easily completed. 5. Computers are a boon to student recruitment, retention, and self-confidence. 6. Computer availability through the student body attracts new faculty. 7. The greatest benefits are seen in what happens between classes, not during class. 8. If students are provided a standard platform with a standard software load, faculty will voluntarily and rather quickly migrate toward the same standard. 9. Student preparations are more substantive and polished. 10. Student preservation of electronic materials is greatly facilitated by rewritable CDs and a program for creating portfolios.

Impact of Laptop Computing on Teaching and Learning

In recent years, more higher education institutions are looking for ways to increase student success by some form of laptop computing. According to Brown (2004), there are now about 170 higher education institutions in the United States and Canada that require students and faculty to have commonly configured laptop computers. This increase

in the implementation of laptops has led to a need to clearly understand their instructional use and potential impact. However, research on the effects of laptop technology is limited probably due to the newness of using laptops in instruction in higher education. Also, it is noted that the available literature is centered on how students are affected. The research on the effects of laptop computer on faculty or institutions has been less pointed, often incidental to the study of student impact.

General findings from prior research indicate that most faculty and students use several applications and software on their laptop computers. Electronic mail and word processing were among the most used applications. General findings have also pointed to problems of knowledge, time constraints, insufficient access, and insufficient administrative support. Nevertheless, prior research reports a positive impact of laptop computers on students and faculty. A brief description of the findings of some of the studies that have dealt with laptop computers in higher education follows.

A study conducted by Hanson (1998) described a teaching and learning environment that utilizes laptop

computers. Specifically, Hanson's study investigated computer and network patterns of use, student attitudes toward laptop computers, and what influence does computer anxiety may have on students' use of technology. Using mixed quantitative and qualitative methods, Hanson's study indicated that students used several applications of computer and network resources for their learning and research. Laptop computers were used for class activities and assignments. Yet, electronic email and word processing were the applications most used by students. Also, students felt that laptops and network resources were used effectively by their instructors and changed the way in which students learned.

Kariuki (2000) did a similar study, but she examined other specific issues in addition to a basic investigation of patterns of use. She investigated the benefits and problems that are associated with the use of laptops. Using observations, a field notebook and interviews as tools for gathering data, the study findings suggested that providing pre-service teachers with access to technology was useful for preparing them for teaching. According to Kariuki (2000), "having the laptop also gave the student a unique

opportunity to advance themselves in ways that may never have come their way otherwise" (p. 109). In fact, using the laptop provided students with a wealth of resources, opportunities and challenges. As for the problems that were associated with the use of laptops, the study revealed several problems and barriers such as sharing the laptop, and other technical, training and help desk problems.

In addition, the literature revealed several studies that, in addition to investigating patterns of use, examined attitudes and concerns of faculty and/or students toward the implementation of laptops. One example is Lowry's 2001 study, which explored the relationship between student attitudes toward mathematics and other variables such as computer use, previous mathematics classes and past computer experience. The findings of Lowry's study showed that student attitudes ranged from feelings of intimidation, beneficial, useful/necessary and narrow segments. Also, a significant relationship was found between students' overall attitudes and laptop computer use.

A recent example of studies of attitudes toward laptop computers is Bauer's 2003 study titled "Undergraduate

Student Perception, Attitudes and Expectations of a Laptop Initiative." In this qualitative study, Bauer explored computing habits of laptop students and their attitudes toward a laptop initiative. Bauer discovered that students had positive attitudes toward their laptops and considered them as an important and integral part of their academic experience. The study concluded with several suggestions for improvements on laptop initiatives.

Other studies have focused on the impact of laptop initiatives on the teaching and learning environment. For example, Lord and Bishop (2001) conducted an assessment study of the Laptop Initiative at Floyd College based on three dimensions: (1) campus culture change, (2) the degree to which faculty and students think that technology has enhanced teaching and learning, and (3) the use of AAHE's technology assessment initiatives to assess technology efforts from a "value-added" perspective. For the second dimension, the findings of the study revealed that: most students believed they communicate more with their instructor because they had a laptop; about half of the students believed that they communicate more with their fellow students because they had a laptop; and less than

half of the students believed that having a laptop had increased the amount of time they spend doing course work. Most importantly, the majority of students reported the belief that using a laptop and its related resources had enhanced their learning. For faculty, about two-thirds reported an increase in the quality and quantity of their communication with students. Also, most faculty members indicated that they incorporated active learning activities into their courses using the laptops.

In addition to describing the “computerized” classroom, Anderson (2001) examined the impact of computer technology on the teaching and learning environment. Among other findings, students endorsed the use of laptop computers because of convenience, ease of communication, and doing research. However, students stated that they did not develop strong connections with their instructors.

The University of Minnesota at Crookston, which is one of the few early universities that distributed laptops to its entire campus at once, conducted a study in 1997 on the impact of laptop computing. Ninety three percent of the students reported that laptops helped them build technology skills needed in their future career and 85% felt that

laptops helped them improve their research skills (Kontos, 2002).

As we have seen, prior research showed that the Laptop Initiative has the potential to improve classroom instruction in meaningful ways. However, we need to know how this potential can best be realized. Faculty and students can provide valuable insights by describing their perceptions of the impact of the Laptop Initiative on the teaching and learning process. Thus, this study will shed some light on the impact of laptop computers and laptop initiatives on teaching practices and the learning environment.

Seven principles for Effective Teaching Practice

As explained earlier, a key goal of technology integration is to enhance teaching and learning. In order for technology to aid and enhance teaching and learning, several teaching practices need to be considered. This section discusses a well-known work on best teaching practices in higher education, conducted by Chickering & Gamson (1987). The key instructional practices described by

Chickering & Gamson (1987) have been found to influence teaching and learning as this section outlines.

Called the “Seven Principles for Good Practice in Undergraduate Education,” these practices have been explored and validated in numerous studies (Gamson, 1991). According to Angelo (1996), Chickering & Gamson’s work is one of the most widely known and applied studies on effective teaching. Murray (1995) stressed that the *Seven Principles* offer some of the most influential statements of good teaching practice and emphasizes the importance of positive student-faculty interaction both inside and outside the classroom. Overall, these Seven Principles distill decades of research on teaching in higher education, providing some guidance on the best practices for structuring the teaching and learning environment. While each principle can stand on its own, when all are present their effects multiply. They together employ powerful forces in the teaching and learning environment: interaction, cooperation, diversity, expectation and responsibility (Kuh & Vesper, 1997 as cited in Buckley, 2003).

Since the Seven Principles were created before the new communication and information technologies became main resources for teaching and learning in higher education, Chickering and Ehrmann (1996) have updated the original report by describing some appropriate ways to use technologies to advance the Seven Principles. According to Chickering & Ehrmann (1996), “if the power of the new technologies is to be fully realized, they should be employed in ways consistent with the seven principles” (p. 3).

In recent years, Chickering & Gamson’s Seven Principles have been used as a basis for some studies that have dealt with the use of technology in higher education (Chickering & Gamson, 1999). For example, Winegar (2000) explored the extent to which the *Seven Principles* were used by faculty in delivering web-based courses. Also, Guidera (2000) used a survey based on the *Seven Principles* in order to explore faculty members’ perceptions of the effectiveness of online instructional delivery. In addition, Lord and Bishop (2001) conducted an assessment study of the Laptop Initiative at Floyd College and used the Seven Principles to generate their survey items. Most

recently, Buckley (2003) investigated student perceptions of learning in an online classroom and how their experiences correlated with the *Seven Principles*. Furthermore, Olson (2003) used a survey that was based on the Seven Principles to explore student perceptions of hybrid classes, as compared to the traditional face-to-face classes and to investigate whether students perceived any improvement in their learning experience.

According to Chickering & Gamson (1987), good practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages active learning; (4) gives prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; and (7) respects diverse talents and ways of learning. A discussion of each principle follows.

Contact Between Student and Faculty

According to Chickering & Gamson (1987), “frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement” (p. 4). The importance of this principle is well supported by

the literature on effective teaching. Ross (1989) asked university students to describe the best and worst teaching situations they faced in their university experience. In relation to student-faculty contact, the findings showed that faculty support was one of the most frequently mentioned as a positive experience. Students reported that effective faculty members were always available at office hours or available out of class. Sorcinelli (1991) conducted a review of the research findings on the Seven Principles and concludes that a high correlation exists between faculty-student contact and teaching effectiveness. While much of the research in this area has focused on student ratings of their college teachers, some studies have compared student ratings with peer and self-evaluation as well (Sorcinelli, 1991).

Research on effective teaching has also shown that measures of achievement, such as grades and degree completion, are positively affected by increased interaction between students and faculty (Pascarella & Terenzini, 1991). Also, frequent interactions between students and faculty lead students to be more satisfied with their college experience (Astin, 1985). In addition,

the literature has shown that student-faculty contact outside the classroom positively affects both student learning and personal development (Sorcinelli, 1991).

As noted, Chickering & Ehrmann (1996) have updated the original *Seven Principles* by describing some appropriate ways to use technology. Chickering & Ehrmann (1996) stated that “electronic mail, computer conferencing, and the World Wide Web increase opportunities for students and faculty to converse and exchange work much more speedily than before, and more thoughtfully and ‘safely’ than when confronting each other in a classroom or faculty office” (p. 4). Chickering & Ehrmann (1996) argued that using technology enhanced student-faculty contact by making it “more intimate, protected, and convenient” (p. 4).

Reciprocity and Cooperation among Students

Cooperative learning refers to teaching methods in which learners work together in pairs or small groups to accomplish shared goals (Slavin, 1995). Chickering & Gamson (1987) asserted that the use of cooperative learning techniques in higher education improves learning and increases student involvement. They stated, “Learning is enhanced when it is more like a team effort than a solo

race. Good learning is usually collaborative and social, not competitive and isolated" (p. 4).

The literature indicates that cooperative learning techniques are effective teaching tools in higher education. There is evidence that when learning settings are structured to allow cooperative learning, students benefit both intellectually and socially (Davis, 2001; Johnson & Johnson, 1999; McKeachie, 1999; Slavin, 1995; Sorcinelli, 1991; Gerlach, 1994). According to McKeachie et al. (1986), students in student-led methods courses show improvements in ability to apply concepts, attitudes, motivation, or group membership skills.

According to Chickering and Ehrmann (1996), technology helps increase opportunities for students to interact and cooperate with fellow students. They stated that "study groups, collaborative learning, group problem solving, and discussion of assignments can all be dramatically strengthened through communication tools that facilitate such activity" (p. 4).

Active Learning Techniques

In describing this third principle, encouraging active learning, Chickering & Gamson (1987) stated,

> Learning is not a spectator sport. Students do not learn much just sitting in classes, listening to teachers talk, reading pre-packaged assignments, memorizing, and then spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives. They must make what they learn part of themselves. (p. 5)

Although there is no common definition of the term *active learning* (Bonwell & Eison, 1991), several scholars have offered some defining characteristics for active learning. Anthony (1996, as cited in Guidera, 2000, p. 40) described *active learning* as "activities in which students are given considerable autonomy and control of the direction of learning activities." Cleary (1996) stated that active learning exhibits specific characteristics such as lively interaction, teamwork, common objectives, passion for learning, and active participation. Sorcinelli (1991) noted that there is a strong connection between the second principle of cooperation and this third principle of active learning. However, "while cooperative learning calls for active involvement of students organized into small groups, active learning can be experienced solo" (Sorcinelli, 1991, p. 16). Bonwell & Eison (1991, p. 2) listed active learning characteristics as follows:

- Students are involved in more than listening.
- Less emphasis is placed on transmitting information and more on developing student skills.
- Students are involved in higher-order thinking (e.g., analysis, synthesis, evaluation).
- Students are engaged in activities (e.g., reading, discussing, writing).
- Greater emphasis is placed on students' exploration of their own attitudes and values.

Chickering and Ehrmann (1996) stressed that the increase of technologies "that encourage active learning is staggering" (p. 5). They suggested that activities that require the use of technology be approached both as tools and resources to develop deeper understanding of concepts and to promote active learning.

Appropriate Feedback

Chickering & Gamson (1987) emphasized that "knowing what you know and don't know sharpens learning. Students need appropriate feedback on performance to benefit from courses" (p. 5). This feedback includes diagnosis at the beginning of the semester, frequent exams with prompt

feedback throughout the term and assessment at various points during college. According to Sorcinelli (1991), there is overwhelming support in the literature that providing students with frequent and prompt feedback is an effective teaching practice. Hattie & Jaeger (1998) stated that positive feedback focusing on an assigned task has a positive impact on student attitudes and achievement. In short, Sorcinelli (1991) indicated that the most important conclusion to be reached from research on effective teaching is that “immediate, corrective, and supportive feedback is central to learning” (p. 19).

According Chickering and Ehrmann (1996), technology supports prompt feedback. In addition to the use of electronic mail, faculty “can use technology to provide critical observations” (p. 5). In addition, computers “can provide rich storage and easy access to student products and performances” (p. 5). Computers also can “keep track of early efforts, so instructors and students can see the extent to which later efforts demonstrate gains in knowledge, competence, or other valued outcomes” (p.5).

Time on Task

According to Chickering & Gamson (1987), “time plus energy equals learning. There is no substitute for time on task. Learning to use time well is critical for students and professionals alike… Allocating realistic amounts of time means effective learning for students and effective teaching for faculty” (p. 5).

As reviewed by Sorcinelli (1991) there is some evidence that effective use of time in classes provides an effective teaching and learning environment. A study of student evaluations of teaching, for example, reported significant correlations between the effective use of class time and overall rating of class, instructor and knowledge learned (Franklin, as cited in Sorcinelli, 1991). While the general consensus of the literature is that the more time spent on learning, the greater the amount of learning, “there are still large gaps in our understanding of time on task” (Sorcinelli, 1991, p. 20). As McKeachie et al. (1986) showed, the important issue is not simply the amount of time spent but how it is spent and how do variables such as time management, time allocation, pacing and time on task interact?

In relating technology to this principle, students can use technology to limit their time commuting to school and to effectively communicate with class members and faculty, and faculty can enhance their teaching strategies. Computers can record student participation and interaction and help document student time on task (Chickering and Ehrmann, 1996).

High Expectations

According to Chickering & Gamson (1987), “expect more and you will get more” (p. 5). Chickering & Gamson (1987) stated that high expectations are important for all students: for poorly prepared students and students unwilling to work hard, as well as for bright and well motivated students. They asserted, “Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations of themselves and make extra efforts” (Chickering & Gamson (1987, pp. 5-6).

According to Berliner’s (1984, as cited in Sorcinelli, 1991, p. 21) research, if “teachers set high but attainable goals for academic performance, academic achievement

usually increases. If teachers set low goals, academic achievement usually decreases.” Sorcinelli (1991) noted that research showed, contrary to faculty belief, that students give higher rating to difficult classes that require them to work hard.

Chickering and Ehrmann (1996) stated that “new technologies can communicate high expectations explicitly and efficiently.” One example of how technology promotes high expectations is that “students feel stimulated by knowing their finished work will be ‘published’ on the World Wide Web” (p. 6). Also, Chickering and Ehrmann stated that “criteria for evaluating products and performances can be more clearly articulated by the teacher, or generated collaboratively with students.” Examples of high quality work can be used to illustrate criteria and shared or modified easily to provide a basis for peer evaluation (Chickering and Ehrmann, 1996).

Diverse Talents and Ways of Learning

The last principle of effective teaching states that differences exist in the ways that people acquire and process information. These differences may greatly

influence teaching practices and the learning environment. According to Chickering & Gamson (1987), “students need the opportunity to show their talents and learn in ways that work for them” (p. 7). Sorcinelli (1991) described this principle as “the linchpin that holds the Seven Principles together, for knowledge about learning styles helps faculty to transmit their course content with greater sensitivity to the differences that students bring to the classroom” (p. 21).

The literature on effective teaching is full of articles and studies that correlate learning styles with effective teaching practice. There is evidence to support that there are various ways of learning and that students differ in their preferences for learning style (Anderson & Adams, 1992). As Chickering & Gamson (1987) stated, “brilliant students in the seminar room may be all thumbs in the lab or art studio,” and “students rich in hands-on experience may not do so well with theory” (p. 7).

Chickering and Ehrmann (1996) argued that, with regard to learning styles, technology can help students “learn in ways they find most effective and broaden their repertoires for learning” (p. 6). Technology also helps “supply

structure for students who need it and leave assignments more open-ended for students who don't" (p. 6).

Summary

Computer technology is assuming an increasingly important role in higher education. The need to integrate computer technology into the classroom is justified by the benefits to both students and faculty. A significant benefit of integrating technology in classroom teaching is the enhancement of teaching and learning. This chapter discusses several key instructional practices that have been found to influence teaching and learning. It also reviews the literature on the impact of specific technology, laptop computers, on the teaching and learning environment in higher education.

Since the study takes place in a teacher preparation program implementing a laptop initiative, this chapter explores how the benefits of using technology can be achieved in teacher education programs specifically. It reviews some guidelines and suggestions that may improve the use of technology in teacher education programs. It also offers information about laptop initiatives, their

history, models, scope, benefits, challenges and lessons learned.

The review of the literature on the impact of laptop initiatives showed that such initiatives have the potential to improve classroom instruction in meaningful ways. However, we need to know how this potential can be realized. Faculty and students can provide valuable insights by describing their perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment. If we agree that laptop initiatives will help improve teaching and learning, then we need to understand the positive or negative impact that may occur. As we have seen, only a few studies have dealt with this important issue. More studies are needed in order to understand the influence of such innovations. Thus, the study will contribute to the body of knowledge concerning the experience of laptop computing in higher education.

The following chapter, Chapter Three, includes descriptions of the participants in this study and the methodology used including the design of the research, the development of the survey and data collection and analysis

procedures. Chapter Three ends by outlining specific ethical considerations that have guided this study.

CHAPTER 3

METHODS AND PROCEDURES

Overview

The main purpose of this study was to understand faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment. This chapter describes the methodology and procedures used to achieve this purpose. It begins with an overview of the research methodology used for this study, followed by a description of the study sample and respondents. A summary of the procedures used to develop and test the survey instrument is presented next. This chapter also explains the specific procedures used for collecting and analyzing the study data. This chapter ends with specific ethical considerations that have guided this study, followed by a brief summary.

Both quantitative and qualitative data were collected to address the research questions and explore faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on the teaching and learning environment. Quantitative methods were used for data gathering, using a 54-58 item survey. In addition, several open-ended questions were developed to elicit additional responses from faculty and preservice teachers.

Participants

This study targets two groups: faculty members and preservice teachers in the Professional Development Sequence in the College of Education at the University of Texas at Austin. The College of Education at the University of Texas at Austin was ranked by U.S. News & World Report (2004) as one of the top 15 schools of education in the U.S. for the year 2005. In Fall 2002, the Laptop Initiative was established by the College of Education, and all students seeking teaching certification were required to use laptop computers. To facilitate the effective use of laptop computers, the College of Education building

facilities are wired to provide Internet access (COE, 2004).

After admission into the College of Education, preservice teachers begin the course requirements of the Professional Development Sequence (PDS), which may vary in length from two to four long semesters. During the Professional Development Sequence semesters, preservice teachers spend increasingly longer periods of time in primary or secondary schools, while continuing to take required academic courses that include methods and classroom management courses (COE, 2004).

The College of Education offers four different levels of certification for preservice teachers through the Professional Development Sequence: (1) early childhood to fourth grade generalist certification, including early childhood to 4th grade generalist and early childhood to 4th grade generalist with bilingual education; (2) middle grades certification (4th to 8th grade), including mathematics, science, natural sciences, liberal arts, English language arts & reading, languages other than English, computer science and social studies; (3) secondary certification (8th to 12th grade), including mathematics,

science, natural sciences, liberal arts, English language arts & reading, languages other than English, history, computer science and social studies; and (4) all-level certification (early childhood to 12th grade), including art, music, physical education (kinesiology), special education and theatre arts. These certification programs are offered as part of degree programs, or as part of post-baccalaureate programs for students who have already earned a bachelor's degree (COE, 2004).

The specific sample for this study was composed of 361 preservice teachers enrolled in the Fall 2004 semester in the Professional Development Sequence. In addition, 48 faculty members who teach courses in the Professional Development Sequence (PDS) were surveyed.

Instrumentation

A survey instrument was developed as the research tool to be used in this study. The survey instrument was named "The Laptop Impact Survey." It has two similar versions: one for faculty members and the other for preservice teachers. The items used in the Laptop Impact Survey were piloted in April 2004. After analysis of the results of the

pilot study, adjustments were made. After gaining the required approval, the Laptop Impact Survey was administered in November 2004 to faculty and preservice teachers to explore their perceptions of the impact of the Laptop Initiative on the teaching and learning environment.

The content of the Laptop Impact Survey was based on the work of Chickering & Gamson's "Seven Principles for Good Practice in University Teaching." Using published discussions of the Seven Principles by Chickering & Gamson and others, several items were developed for each principle by the author. In addition, some items of the Laptop Impact Survey were adapted from prior surveys that used the Seven Principles, such as Lord & Bishop (2001) and Olson (2003). The Laptop Impact Survey instrument is shown in Appendix A and B.

The Laptop Impact Survey was divided into 10 categories: one category for each of Chickering & Gamson's 1987 Seven Principles (46 items for the faculty version and 43 items for the preservice teacher version), an additional category for general statements (12 items for the faculty version and 11 items for the preservice teacher version), broad-based open-ended questions (six questions for the

faculty version and five questions for the preservice teacher version), and demographics (six items). The number of individual items developed for each category is displayed in Table 4. The Laptop Impact Survey layout and design were determined according to requirements suggested by Fink and Kosecoff (1998). Participants accessed The Laptop Impact Survey through an online website and completed it electronically.

Table 4

Structure of Data Collection Instrument

Survey Category	Category Title	No. of Items (Faculty)	No. of Items (Preservice Teachers)
Demographics		6	6
Principle One	Student–Faculty Contact	4	4
Principle Two	Cooperation among Students	5	5
Principle Three	Active Learning	13	11
Principle Four	Prompt Feedback	8	8
Principle Five	Time on Task	7	6
Principle Six	High Expectations	6	6
Principle Seven	Diverse Talents and Ways of Learning	3	3
Category Eight	General Statements	12	11
Open-Ended Questions		6	5

The items representing the Seven Principles of Effective Teaching, as well as the items in the General category, were designed using a nine-point Likert-type scale with (9) being “Strongly Agree” and (1) being “Strongly Disagree.” The open-ended questions were developed to elicit more comprehensive responses from respondents. Moreover, several demographic questions were asked in order to identify specific characteristics of the respondents such as gender, age, ethnicity, experience with teaching or learning with laptops, and field of specialization.

Pilot of the Survey Instrument

The pilot study was conducted during the Spring 2004 semester to test the feasibility of the study design, to ensure the effectiveness of the study tool, and to obtain feedback from the participants. The pilot study group was comprised of 30 preservice teachers within the College of Education. This pilot study helped improve the validity and reliability of the survey instrument.

Statistical analyses were run on the pilot data to determine the reliability of the survey. The pilot survey

statistics were run through the Statistical Package for the Social Sciences (SSPS) in the same manner in which the actual survey responses were later processed. Once the data were input, frequencies were run on each statement. This process included 56 statements within eight categories. The demographics information requested in the survey included program of study, major, gender, age and ethnicity. The results indicated that 60% of the respondents were in the elementary education program and 37% were in the secondary education program, and 37% identified their major as social studies. Of the respondents, 17% were male and 90% were younger than 25 years old. Also 70% were White, 14% were Hispanic, and 14% identified themselves as "other."

A reliability analysis was run on the pilot data to determine the internal consistency of the survey instrument. The initial reliability (alpha) was calculated for each category of the survey (sub-scales) to determine the internal consistency of statements within the categories. Statement Five in Category One, "*I have easy access to my instructor outside of class time*," as well as Statement 34 in Category Five, "*I use my laptop for my own personal use*," were removed due to low inter-scale

reliability. The initial reliability (alpha) for Category One, including all five statements, was .79; by removing statement five, the reliability increased to .87. Similarly, the initial reliability (alpha) for Category Five, including all seven statements, was .78; by removing statement 34, the reliability increased to .88. Reliability scores for categories Two, Three, Four, Six, Seven and Eight were .90, .87, .95, .88, .80 and .89, respectively. The reliability coefficient across the remaining 44 statements in the seven categories was .97.

In addition to removing the two items described above, several other changes to the research instrument were implemented. A major change included increasing the response alternatives from five to nine. A nine-point scale increases both the validity and reliability of an instrument, as well as providing a better fit to a normal distribution. According to Flamer (1983), “scores derived from Likert scales with more response alternatives may better represent the factor underlying the items than scores from scales with fewer response alternatives” (p. 306). This was also suggested by a member of the dissertation proposal committee. In addition, minor

grammatical changes were made to some statements based on feedback from pilot participants and other reviewers. The revised title of the survey became “The Laptop Impact Survey.” Furthermore, changes in the layout and design were made as necessary to make the paper survey correspond to the online version.

Validity and Reliability of the Survey Instrument

To increase the face validity of the developed instrument, the survey instrument was critiqued by several technical experts and scholars outside of the dissertation committee. The purpose was to collect information regarding any ambiguous or missing items; and to ensure that responses to each statement would be clearly related to the research questions of the study. The experts provided comments and suggestions regarding readability, improvement of individual items, the interface, and terminology integrated into the survey instrument.

In addition to outside input, the survey instrument was critiqued by the pilot group of 30 preservice teachers described in the previous section. Each pilot survey was supplemented with validity questions to check respondents’

views of the length of the survey and the clarity and appropriateness of the wording of each statement (See Appendix C). The comments and suggestions presented by the pilot testing group helped improve the survey wording for greater clarity. In addition, the author attended a meeting with the Laptop Steering Committee at the College of Education and was provided with suggestions for further improvement of the survey and the study in general.

After being approved by the Laptop Steering Committee as well as the Institutional Review Board (IRB) of the University of Texas at Austin, the survey was administrated to faculty and preservice teachers in the Professional Development Sequence (PDS) at the School of Education. After collecting data, a reliability analysis was run for the study data to determine the internal consistency of the revised survey and to compare the alpha scores to the ones obtained earlier from the pilot data. The initial reliability (alpha) for the study data was higher than the alpha for the pilot survey described earlier in every category as well as across all categories of the survey. This increase in alpha score was probably due to the many changes made to the survey including the increase of

response alternatives from five to nine. As displayed in Table 5, the alpha scores for each category of the survey were equal to or greater than .75.

Table 5

Instrument Reliability Analysis for Each Category

Category Title	Alpha Score (Faculty)	Alpha Score (Preservice Teachers)
Principle One: Student–Faculty Contact	0.92	0.93
Principle Two: Cooperation Among Students	0.93	0.95
Principle Three: Active Learning	0.95	0.95
Principle Four: Prompt Feedback	0.97	0.97
Principle Five: Time on Task	0.75	0.89
Principle Six: High Expectations	0.97	0.95
Principle Seven: Diverse Talents & Ways of Learning	0.84	0.91
The reliability coefficient across statements in the seven categories	0.98	0.98
Category Eight: General Statements	0.96	0.96

Data Collection

The process of data collection included designing a web-based survey, sending an invitation message including a link to the survey to participants' email addresses, storing participants' responses in a database file, and transforming the database file into a data file for SPSS. Using a web-based survey and collecting data through the

web database have great advantages over the traditional way of collecting quantitative data. These advantages include flexibility, cost-effectiveness, data delivery protection, no missing data, no data entry errors and data safety (Huang, 2000). In addition, using a web-based survey particularly suited the sample in this study since faculty and preservice teachers are facile with web technology. The data collection procedure is described in Figure 1.

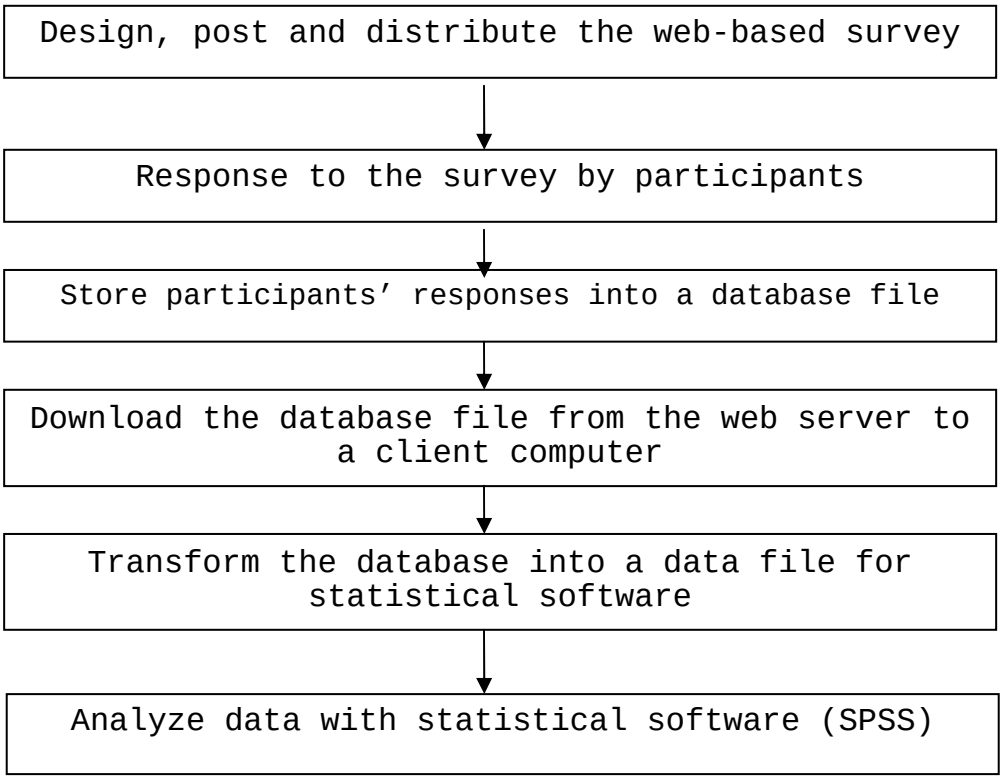

Figure 1 Data collection process for a web-based survey, modified from Huang (2000).

Following the approval of the Institutional Review Board (IRB) of the University of Texas at Austin and the approval of the Laptop Steering Committee at the College of Education, an invitation message was emailed to all faculty and preservice teachers involved in the Professional Development Sequence (PDS) in the Fall 2004 semester. The email message (See Appendix D) requested participation and provided a link to the web-based survey. The link to the Laptop Impact Survey—Faculty Version: http://www.surveymonkey.com/s.asp?u=21998675527 The link to the Laptop Impact Survey—Preservice Teacher Version: http://www.surveymonkey.com/s.asp?u=18490664998

The respondents simply clicked the link which directly opened the Informed Consent page. Respondents were informed of the study's intended subjects and purposes. They were told that their responses to the survey would provide valuable information to the College of Education and would help improve the teacher education program, and encouraged to participate. Also, participants were informed that the findings would be used for research purposes only and their responses would remain confidential. After reading the Informed Consent and agreeing to participate, respondents

could begin answering the survey's questions. Upon completing the survey, respondents clicked the submit button to send the survey to the website database.

One week after sending the original email, a follow-up email was sent by the author to both faculty and preservice teachers urging them to participate. A week later, the chair of the Department of the Curriculum and Instruction sent an email message to faculty, and the program coordinator sent a similar email to preservice teachers. Also, the program coordinator sent an additional email to faculty members asking them to encourage their PDS students to participate in the Laptop Impact Survey. The response rate was enhanced by soliciting support from the chair of the Department of Curriculum and Instruction and the program coordinator. This helped improve the rate of return, which was 48% for faculty and 38% for preservice teachers. The Laptop Impact Survey was conducted during the period between November 11, 2004 and December 10, 2004.

Data Analysis

The analysis of data was designed to comply with the stated purpose of this investigation and answer each of the

three research questions. Responses to the statements on the Laptop Impact Survey were based on a nine-point scale in which “Strongly Agree” received a weight of (9) and “Strongly Disagree” received a weight of (1). The data obtained from the sample were analyzed and reported using descriptive and inferential statistics. All statistical analyses in this study were performed using the Statistical Package for the Social Sciences (SPSS) version 11.0.

Research questions one and two regarding faculty members’ and preservice teachers’ perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment, were answered by computing frequency, the composite means and standard deviation for each statement. Also, the composite means for each principle was used to calculate an overall rating for each category. The following formula was used to compute the mean for Principle One, and each scale was adjusted to match this formula.

(((p1q1+p1q2+p1q3+p1q4/4)/36)*100

Where:

p1q1 is the first item in principle 1,

p1q2 is the second item in principle 1,

4 is the number of items in principle 1, and

36 is the total possible points (4*9=36).

Research Question Three about the similarities and differences between faculty and preservice teachers regarding the perceived impact on teaching practices and the learning environment, was answered by computing the composite means and standard deviations for each category. Also, a *t*-test was used to find out whether there were significant differences between perceptions of faculty and preservice teachers regarding each category of the Laptop Impact Survey. In addition, analysis of variance (one-way ANOVA) was used as the statistical technique to determine whether the means were significantly different among the three subgroups of preservice teachers based on their experience with the Laptop Initiative.

For the open-ended questions of the Laptop Impact Survey, responses were listed and similar responses were grouped into emergent themes. These narrative responses were used to expand upon the quantitative findings. Examples of specific statements were also included.

Ethical Considerations

This study was conducted in accordance with the ethical research standards for human subjects as described by the American Psychologists Association (1997, as cited in Neuman, 2003). The study participants were informed of their right to participate or not participate. They were also assured that their responses would be kept confidential. All data were used for the related research only. In compliance with the academic regulations, the proposal of this study was submitted to the Institutional Review Board (IRB) of the University of Texas at Austin for approval. It was approved on October 15, 2004 (See Appendix E).

Summary

This chapter highlights the research methodology of the study and describes the study settings and population. The chapter describes in detail the procedures used to develop and test the survey instrument that was used to explore faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment. Chapter Three also outlines

the specific procedures used for collecting and analyzing the study data, followed by a description of some ethical procedures that guided the study. The next chapter, Chapter Four, presents the study findings and data analysis.

CHAPTER 4

DATA ANALYSIS

Overview

The purpose of this study was to understand faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment. Participating faculty members and preservice teachers in the Professional Development Sequence (PDS) at The University of Texas at Austin responded to the Laptop Impact Survey. The Laptop Impact Survey was developed based on Chickering & Gamson's (1987) work that identified seven key instructional practices that have been found to influence teaching and learning environments. According to Chickering & Gamson (1987), effective practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages

active learning; (4) provides prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; and (7) respects diverse talents and ways of learning. This chapter presents the results of data analysis and the study findings on the impact of the Laptop Initiative as related to these seven principles of effective teaching. Following a description of the response rate and demographic characteristics of the sample, results are presented for each research question in tabular form and accompanied by a brief description.

Response Rate

During the Fall 2004 semester, an email letter was sent to 48 faculty members and 361 preservice teachers in the Professional Development Sequence (PDS) at the College of Education at The University of Texas at Austin. Of these numbers, 23 and 138 surveys were completed by faculty and preservice teachers respectively, yielding a 48% and 38% return rate in the same order. However, one return by faculty and three returns by preservice teachers were excluded because of missing data on more than 85% of the survey. Thus, the usable return rate was approximately 46%

for faculty and 37% for preservice teachers. Table 6 shows details of the Laptop Impact Survey response rates.

In general, the larger a sample is, the greater its statistical power when assuming that the other factors are held constant (Gall et al., 1996). While the total sample size in this study for preservice teachers was high at 135, the sample size for faculty was only 22. Thus, the size of the sample constituted one of the limitations of this study and, therefore, the findings of the study are informative regarding the perceptions of only the participating individuals and have no statistical power to be generalizable to other settings.

Table 6

Survey Respondents

	Sample	Total Responses	Usable Responses	Percent of Usable Responses
Faculty Members	48	23	22	46%
Preservice Teachers	361	138	135	37%

Demographics

The first part of the Laptop Impact Survey contains five items related to demographics. This section provides descriptive data including frequencies and percentages of the respondents' demographics. The demographics information requested in the Laptop Impact Survey included program of study, major, gender, age, ethnicity and experience with the Laptop Initiative.

Of the 22 surveys submitted by faculty, 90.9% of the respondents were White and 9.1% were Hispanic; no other ethnicity was reported by faculty members. As Table 7 indicates, the majority of faculty respondents were female (68.2%). Male faculty members (31.8%) accounted for less than one-third of the survey return. Also, the age of most of the faculty participants ranged between 41 and 50 years. Regarding the experience with the teaching with laptop computers, the majority of the faculty (57.1%) reported experience of four semesters or more, 14.3% reported three semesters, 14.3% reported two semesters, and 14.3% reported only one semester.

As for the level of certification taught, 45.5% of faculty reported teaching in the Early Childhood to 4th

Grade certification, 27.3% reported teaching in the Secondary certification (8th to 12th Grade), and 27.3% reported teaching in the All-level certification (Early Childhood to 12th Grade). None of the faculty respondents reported teaching in the Middle Grades certification. In terms of subjects taught by the faculty respondents, 13.6% taught Science, 13.6% taught Reading, 9.1% taught Mathematics, 9.1% taught English Language Arts, 9.1% taught Social Studies, 4.5% taught Kinesiology, 4.5% taught Special Education, 4.5% taught Languages Other than English, 4.5% taught School Organization & Classroom Management, and 22.7% taught Other Subjects. Table 7 summarizes the findings of the demographics items for faculty members.

Table 7

Demographics of Faculty Member Respondents

Demographics		No. of Respondents	Percent
Certification Level	- Early Childhood to 4th Grade certification	10	45.5%
	- Middle Grades certification	0	0%
	- Secondary certification	6	27.3%
	- All-level certification	6	27.3%
Subject	- Mathematics	2	9.1%
	- Science	3	13.6%
	- Social Studies	2	9.1%
	- Kinesiology	1	4.5%
	- Special Education	1	4.5%
	- Liberal Arts	0	0%
	- English Language Arts	2	9.1%
	- Languages other than English	1	4.5%
	- Computer science	0	0%
	- Applied Human Learning	1	4.5%
	- Reading	3	13.6%
	- School Organization & Classroom management	1	4.5%
	- Other (music, theatre, …… etc)	5	22.7%
Gender	- Female	15	68.2%
	- Male	7	31.8%
Ethnicity	- African American	0	0%
	- Asian	0	0%
	- Hispanic	2	9.1%
	- Native American	0	0%
	- White	20	90.9%
	- Other	0	0%
Age	- Less than 40 years	4	18.2%
	- 41 to 50 years	12	54.5%
	- 51 to 60 years	2	9.1%
	- 61 years and older	4	18.2%
Experience with the Laptop Initiative	- 1 semester	3	14.3%
	- 2 semesters	3	14.3%
	- 3 semesters	3	14.3%
	- 4 semesters or more	12	57.1%

As for preservice teachers, the breakdown by gender included surveys from 109 females (82 %) and 24 males (18%). The race/ethnicity reported by 135 preservice teacher respondents was 97 White/Caucasian (72.4 %). The next highest numbers reported for ethnicity were 19 (14.2 %) for Hispanic origin and 13 (9.7%) for Asian. Also, the majority of preservice teacher respondents (88.1%) reported that their age was less than 25 years.

Furthermore, preservice teachers reported a wide range of specialization areas of study (subjects), but the largest group came from Social Studies (18.3%) and Applied Human Learning (16.7%). About half of the preservice teacher respondents (50.4%) were in the Early Childhood to 4th Grade certification program, with 33.8% in the Secondary certification (8th to 12th Grade) program, 10.5% in the All-level certification (Early Childhood to 12th Grade) program and only 5.3% in the Middle Grades certification (4th to 8th Grade) program. The preservice teacher demographic results are summarized in Table 8.

Table 8

Demographics of Preservice Teacher Respondents

Demographics		No. of Respondents	Percent
Certification Level	- Early Childhood to 4th Grade certification	67	50.4%
	- Middle Grades certification	7	5.3%
	- Secondary certification	45	33.8%
	- All-level certification	14	10.5%
Subject	- Mathematics	11	8.7%
	- Science	4	3.2%
	- Social Studies	23	18.3%
	- Kinesiology	4	3.2%
	- Special Education	4	3.2%
	- Liberal Arts	3	2.4%
	- English Language Arts	15	11.9%
	- Languages other than English	9	7.1%
	- Computer science	0	0%
	- Applied Human Learning	21	16.7%
	- Reading	4	3.2%
	- School Organization & Classroom management	4	3.2%
	- Other (generalist, music.. etc)	24	19%
Gender	- Female	109	82%
	- Male	24	18%
Ethnicity	- African American	2	1.5%
	- Asian	13	9.7%
	- Hispanic	19	14.2%
	- Native American	1	0.7%
	- White	97	72.4%
	- Other	2	1.5%
Age	- Less than 25 years	118	88.1%
	- 25 to 29 years	8	6%
	- 30 to 34 years	6	4.5%
	- 35 years and older	2	1.5%
Experience with the Laptop Initiative	- 1 semester	55	41.7%
	- 2 semesters	34	25.8%
	- 3 semesters	37	28%
	- 4 semesters or more	6	4.5%

Findings for Research Question One

The results of the survey pertaining to research question one, “What are faculty members’ perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment?” are summarized in Table 9. In this section, the mean values and standard deviation of faculty members’ perceptions are presented. Mean values higher than 50.00 were considered relatively positive and mean values lower than 50.00 were considered relatively negative.

As shown in Table 9, faculty member respondents expressed a moderately positive view of the impact of the Laptop Initiative on teaching practices. Regarding the Seven Principles, faculty member respondents had the most positive perceptions for Principle Five: Time on Task (M=75.44). On the other hand, Principle Three: Active Learning, received the least positive perceptions as reported by faculty (M=54.32).

Table 9

Total Means for Each Principle / Faculty

Principle	M	SD	N
Principle One: Student–Faculty Contact	60.61	22.54	22
Principle Two: Cooperation Among Students	63.92	19.90	21
Principle Three: Active Learning	54.32	20.63	17
Principle Four: Prompt Feedback	57.46	25.09	20
Principle Five: Time on Task	75.44	11.38	21
Principle Six: High Expectations	59.04	26.65	20
Principle Seven: Diverse Talents & Ways of Learning	58.85	16.95	21

Each category includes several statements. For each statement, faculty respondents were asked to indicate their levels of agreement on a Likert scale which ranged from (9), “Strongly Agree,” to (1), “Strongly Disagree.” The median response of (5) was equated with Neutral. It should be noted that the number of faculty responses to the survey statements ranged from 20 (91%) to 22 (100%). Aggressive analysis of all 58 survey statements revealed the highest agreement reported by faculty for the following three statements: “I use my laptop to plan course activities and assignments” (M=8.48), “My students use laptops to complete course assignments” (M=8.43), and “I use my computer laptop on a daily basis” (M=8.38). On the other hand, the lowest

ranked statements by faculty were: “The amount of time my students actively participate in class discussions increases because they use laptops” (M=3.50), and “My students stay involved throughout class because they use laptops” (M=3.67). The following section provides the mean values and standard deviation for each statement of the Laptop Impact Survey (Faculty Version). For individual statements, mean values greater than 5.00 were considered relatively positive and mean values lower than 5.00 were considered relatively negative.

Principle One: Student-Faculty Contact

As shown in Table 10, faculty members gave the highest positive response about student-faculty contact to the statement “I communicate online (i.e., email) more with my students because I use a laptop” (M=6.41), followed by “I communicate more with my students outside of class time because I use a laptop” (M=6.00). Also of note, these two statements had the most diverse response with the highest variability of response (SD=3.05 and 2.93 respectively). On the other hand, the statement “I communicate in class more with my students because I use a laptop,” received a

relatively negative rating by faculty (M=4.45).

Table 10

Faculty Perceptions/ Principle One: Student–Faculty Contact

Statement	M	SD	N
2. I communicate online (i.e., email) more with my students because I use a laptop.	6.41	3.05	22
3. I communicate more with my students outside of class time because I use a laptop.	6.00	2.93	22
4. Overall, the quality of my communication with my students increases because I use a laptop.	5.81	2.79	22
1. I communicate in class more with my students because I use a laptop.	4.45	2.40	22

Principle Two: Cooperation Among Students

Faculty members reported relatively positive responses regarding all statements in this category. However, the statement “Online activities that involve cooperation among students have increased because of the laptops,” received the highest level of agreement (M=6.81) by participating faculty. Also of note, this same statement had the least diverse response with the lowest variability of response (SD=1.97). Details on the means and standard deviations of other statements are shown in Table 11.

Table 11

Faculty Perceptions/ Principle Two: Cooperation Among Students

Statement	M	SD	N
7. Online activities that involve cooperation among students have increased because of the laptops.	6.81	1.97	21
9. The quality of my students' team products increases because of the laptops.	6.43	2.06	21
5. My students do more cooperative work with each other because they use laptops.	6.24	2.68	21
8. The quality of interaction between my students increases because of the laptops.	5.76	2.36	21
6. In-class activities that involve cooperation among students have increased because of the laptops.	5.66	2.43	21

Principle Three: Active Learning

Faculty respondents exhibited mixed levels of agreement and disagreement with statements of this principle (see Table 12). Three statements received relatively positive responses: "Using laptops makes taking class notes easier for my students" (M=6.67), "Using a laptop makes teaching fun" (M=6.65), and "My students' participation in online discussions increases because they use laptops" (M=6.14). On the other hand, faculty members

reported some level of disagreement with the two statements, “The amount of time my students actively participate in class discussions increases because they use laptops” (M=3.50), and “My students stay involved throughout class because they use laptops”(M=3.67). The statement “The amount of responsibility my students have for their learning increases because they use laptops,” (SD=3.06) had the most diverse response with the highest variability of response. In contrast, the statement “Using laptops makes taking class notes easier for my students,” (SD=1.96) had the least diverse response with the lowest variability of response.

Table 12

Faculty Perceptions/ Principle Three: Active Learning

Statement	M	SD	N
16. Using laptops makes taking class notes easier for my students.	6.67	1.96	21
14. Using a laptop makes teaching fun.	6.65	2.08	20
18. My students’ participation in online discussions increases because they use laptops.	6.14	2.17	21
15. Using a laptop makes teaching more challenging.	6.00	2.37	21
10. The amount of responsibility I have for my teaching increases because I use a laptop.	5.85	2.48	20

Table 12 (continued).

Statement	M	SD	N
11. The amount of responsibility my students have for their learning increases because they use laptops.	5.62	3.06	21
22. My students' ability to reflect on class discussion and readings increases because they use laptops	5.45	2.78	20
13. The amount of control my students have for their learning increases because they use laptops.	5.38	2.44	21
20. Using a laptop in class makes learning active.	5.29	2.53	21
21. My students' ability to relate the concepts and skills in my classes to real life increases.	5.10	2.62	21
12. The amount of control I have for my teaching increases because I use a laptop.	4.57	2.69	21
19. My students stay involved throughout class because they use laptops.	3.67	2.92	21
17. The amount of time my students actively participate in class discussions increases because they use laptops.	3.50	2.72	20

Principle Four: Prompt Feedback

Within the fourth Principle, Prompt Feedback, faculty members reported relatively positive responses for all statements of this principle (see Table 13). The statement "Using laptops improved my students' ability to provide

feedback to each other," (M=6.67) was ranked by participating faculty at the highest level of agreement. The lowest level of agreement reported by faculty was for the statement "The quality of my feedback increases because of my use of the laptop" (M=5.14).

Table 13

Faculty Perceptions/ Principle Four: Prompt Feedback

Statement	M	SD	N
30. Using laptops improved my students' ability to provide feedback to each other.	6.67	2.22	21
26. My students get more feedback from each other because they use laptops.	6.43	2.23	21
27. My students get prompt feedback from each other because they use laptops.	6.00	2.47	21
24. I provide prompt feedback to my students because I use a laptop.	5.86	2.76	21
23. I provide more feedback to my students because I use a laptop.	5.76	3.08	21
29. Using a laptop improved my ability to provide feedback to my students.	5.70	2.85	20
28. The quality of my students' feedback increases because of the laptop.	5.67	2.61	21
25. The quality of my feedback increases because of my use of the laptop.	5.14	2.89	21

Principle Five: Time on Task

This principle had the highest level of agreement among all others of the Seven Principles. The following three statements: “I use my laptop to plan course activities and assignments,” “My students use laptops to complete course assignments,” and “I use my computer laptop on a daily basis,” had very high positive responses with means of 8.48, 8.43 and 8.38, respectively. The other statements in this section also received relatively positive responses. Table 14 summarizes the findings of faculty perceptions regarding statements of this principle.

Table 14

Faculty Perceptions/ Principle Five: Time on Task

Statement	M	SD	N
33. I use my laptop to plan course activities and assignments.	8.48	0.93	21
34. My students use laptops to complete course assignments.	8.43	1.16	21
31. I use my computer laptop on a daily basis.	8.38	1.32	21
37. My ability to plan tasks at times that are convenient for me was increased because I use a laptop.	6.29	2.22	21
36. Using a laptop has increased the amount of time I spend planning course work.	6.14	2.76	21

Table 14 (continued).

Statement	M	SD	N
35. My laptop helped me plan my course activities and assignments promptly.	6.10	2.64	21
32. I found myself able to manage my time efficiently because I use a laptop.	6.00	2.61	21

Principle Six: High Expectations

Within the Principle of High Expectations, the statement “Using a laptop has increased my expectations of my institution,” (M=6.14) was ranked at the highest level of agreement. The second highest level of agreement was reported for the statement “Using a laptop has increased my expectations of myself” (M=6.00), followed by the statement “Using a laptop has increased my expectations of my students” (M=5.76). The findings of faculty perceptions regarding items for this principle are shown in Table 15.

Table 15

Faculty Perceptions/ Principle Six: High Expectations

Statement	M	SD	N
40. Using a laptop has increased my expectations of my institution	6.14	3.00	21
38. Using a laptop has increased my expectations of myself.	6.00	2.93	21
39. Using a laptop has increased my expectations of my students	5.76	2.90	21
41. My students have higher expectations of me because of the laptops	5.67	2.87	21
42. I have higher expectations of my students' research efforts because they use laptops	5.60	2.82	20
43. Using a laptop makes my students feel as if they are taking a more active part in their education	5.57	2.66	21

Following the list of statements, faculty participants were asked to respond to a subsequent open-ended question that asked, "Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?" Seventeen faculty members responded to this question. Eight of them responded with yes and some of them voiced strong agreement sentiments such as, "Without it, I don't know how I'd teach," and "So far it has been a very helpful system." Other faculty members reported mixed feelings and/or expressed some reservations regarding some issues related

to the current use of laptops by students. One important issue that has arisen from faculty responses regards unanticipated consequences, such as off-task behavior of some students who surf the Internet and read/write email messages during classes. Several faculty members were unhappy with the way students use their laptops during class. More details and discussion of this issue will be provided in this chapter and in Chapter Five. Documentation of all responses to this open-ended question is provided in the transcripts, which are included in Appendix F.

Principle Seven: Diverse Talents & Ways of Learning

As shown in Table 16, faculty reported the highest positive response for statements of this principle for the statement “My students were able to make connections between disciplines while doing research because they use laptops” (M=5.67). On the other hand, the statement “Using a laptop increases my students’ chances to get to know other students who are different from them,” (M=4.76) received a lower agreement rating by participating faculty members.

Table 16

Faculty Perceptions/ Principle Seven: Diverse Talents & Ways of Learning

Statement	M	SD	N
45. My students were able to make connections between disciplines while doing research because they use laptops.	5.67	2.29	21
46. My students used the laptop to accommodate differences in learning styles.	5.38	2.31	21
44. Using a laptop increases my students' chances to get to know other students who are different from them.	4.76	2.21	21

Category Eight: General Statements

Faculty respondents exhibited relatively positive responses regarding most statements in this category. The statement "I think it is easier for my students to do research using their laptop computers," (M=7.33) received the highest level of agreement by participating faculty. The second highest level of agreement was reported for the statement "I think the laptop cost is worthwhile," and "I make effective use of the potential of laptop computers" (M=6.95 for both). The statement "My students' ability to better understand the ideas taught in class increases

because of the laptops," (SD=3.45) had the most diverse response with the highest variability of response. Details about other statement means and standard deviations are shown in Table 17.

Table 17

Faculty Perceptions/ General Statements

Statement	M	SD	N
57. I think it is easier for my students to do research using their laptop computers.	7.33	1.62	21
50. I think the laptop cost is worthwhile.	6.95	2.37	20
53. I make effective use of the potential of laptop computers.	6.95	1.43	21
51. Using a laptop works well with the way I like to teach.	6.90	1.97	21
55. I believe using a laptop and its related resources has enhanced my teaching.	6.86	2.01	21
56. I believe using a laptop and its related resources has enhanced students' learning.	6.62	2.25	21
54. My students make effective use of the potential of laptop computers.	6.57	2.01	21
58. My students' ability to better understand the ideas taught in class increases because of the laptops.	6.35	3.45	20
52. Using the laptops work well with the way my students like to learn.	6.24	1.95	21
49. Using laptops during class is a good idea.	5.90	2.49	20

Table 17 (continued).

Statement	M	SD	N
48. Overall, the quality of my students work increases because of the laptop.	5.62	2.62	21
47. Using a laptop encourages my students to excel at the work they do.	5.48	2.48	21

Faculty Responses to the Open-Ended Questions

Consistent with the multi-method approach proposed by Gay (1996), responses were sorted according to emerging themes based on each of the open-ended questions. Although the study was primarily based upon the analysis of quantitative survey data, narrative responses provided a richer and deeper understanding of the participants' perceptions of the impact of the Laptop Initiative as related to the teaching and learning environment. The four open-ended questions at the end of the Laptop Impact Survey asked faculty members in what ways they feel the Laptop Initiative has been of greatest benefit to their teaching, to list at least three things that students could do to improve the classroom learning and teaching environment using the laptop, whether the Laptop Initiative has had an influence on the research they conduct, and whether there

was any other information they would like to share about their experience of using laptops in teaching and learning. Of the 22 participating faculty members, the number of those who answered open-ended questions ranged between 12 and 14 persons for each question. The following section outlines the most important issues noted by faculty members.

Some of the important benefits of the Laptop Initiative that faculty revealed were the ease of course planning and organization, communication in and out of class time, time savings, greater opportunities to help students do projects and assignments, and availability of tremendous resources that could be brought into the classroom. One faculty member stated that the Laptop Initiative made teaching more challenging. She explained, “I have been teaching a particular PDS class for 10 years, and it's never the same two times in a row. The laptops have helped me keep things fresh and interesting for me, and I think that keeps the students more interested, too.” Yet, two faculty members had negative responses to the question about benefits. They indicated that they do not think that the Laptop Initiative has been a great benefit

to their teaching. One asked for significant rethinking of using laptops in the classroom. She explained,

> To incorporate laptops without a significant rethinking has been frustrating to me. I use laptops extensively and fairly innovatively, yet I feel that, to simply adapt the laptop to my old teaching style has not been effective. One example I'm sure you'll hear over and over is dealing with students who are surfing (checking email, browsing the web, etc.) during class in ways that take them off task. Since it is virtually impossible to stop this (I've tried) I believe the solution has to do with a significant reconfiguration of the learning experience and the kinds of responsibilities I expect students to take on.

For the question about things that students could do to improve the classroom learning and teaching environment using the laptop, faculty responses called attention to unanticipated consequences, such as off-task behavior during class time. Six faculty members (out of 12 who responded to this question) viewed off-task behavior during class as problematic and distracting. Off-task behaviors include accessing the Internet for several purposes such as emailing, playing games and shopping. Faculty indicated that students can improve the classroom learning and teaching environment by keeping their focus on class. The

following are examples of faculty responses regarding off-task behavior:

“Stop going online for non-course related activities during instructional time; is this a chimera of a goal though?”

“Only use laptops for relevant work in class, rather than using it to distract themselves;”

“Stop surfing the net during class;”

“Use it for specified tasks not recreation in class. I don't like to have the UT students use their laptops when wireless is available in a room b/c of past negative experiences w/students who blatantly were off-task during class;”

“Center their computer use on the laptop rather than keeping multiple systems going;” and

“Stop using the laptop to check email and surf the net. Use the laptop as a portable device--not plugging it in during class--this drives me nuts.”

When asked about things that students could do to improve the classroom learning and teaching environment using the laptop, some faculty provided some general

suggestions for classroom improvement such as that students could: expand their use of resources to inform practice, engage with others' ideas in online discussions and take notes during class. One faculty member highlighted the role of the institution, "I don't know if the students themselves can do anything. I think that their needs to be more institutional instruction and support for the students."

Seven faculty members (50%) answered "No" to the question about whether the Laptop Initiative influences the research they conduct. For the other seven persons who answered "Yes," they explained it has made it very convenient to access needed information, made it easy to stay in touch with colleagues and students via email while traveling to do on-site research, and made it easier to take field notes in classrooms.

Overall, the synthesis of these narrative responses along with the analysis of the survey quantitative data was used to gain insight into findings and in some cases to support conclusions reached. Documentation of all responses to the open-ended questions is provided in the transcripts included in Appendix F.

Findings for Research Question Two

The results of the survey pertaining to research question two, “What are preservice teachers’ perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment?” are summarized in Table 18. In this section, the mean values and standard deviation of preservice teachers’ perceptions are presented. Mean values higher than 50.00 were considered relatively positive and mean values lower than 50.00 were considered relatively negative.

As shown in Table 18, preservice teacher respondents expressed almost neutral view of the impact of the Laptop Initiative on most principles. Participating preservice teachers had the most positive perceptions for Principle Five: Time on Task (M=67.19). On the other hand, Principle Three: Active Learning, and Principle Four: Prompt Feedback, received a lower agreement rating by preservice teachers (M=47.34 and 48.51 respectively).

Table 18

Total Means for Each Principle / Preservice Teachers

Principle	M	SD	N
Principle One: Student–Faculty Contact	51.27	22.43	134
Principle Two: Cooperation Among Students	53.94	23.84	117
Principle Three: Active Learning	47.34	23.51	114
Principle Four: Prompt Feedback	48.51	25.76	117
Principle Five: Time on Task	67.19	19.26	114
Principle Six: High Expectations	51.71	23.54	116
Principle Seven: Diverse Talents & Ways of Learning	51.96	21.41	115

Each category includes several statements. For each statement, preservice teacher respondents were asked to indicate their levels of agreement on a Likert scale which ranged from (9), meaning “Strongly Agree,” to (1), meaning “Strongly Disagree.” The median response of (5) was equated with Neutral. It should be noted that the number of preservice teachers’ responses to the survey statements ranged from 135 (100%) and 116 (86%). Aggressive analysis of all 54 survey statements revealed the highest agreement reported by preservice teachers for the following statements: “I use my computer laptop on a daily basis” (M=7.99), “I use my laptop to complete course assignments” (M=7.75), and “My ability to complete tasks at times that

are convenient for me was increased because I use a laptop" (M=6.62). On the other hand, the lowest reported agreement by preservice teachers was for the statements "The amount of time I actively participate in class discussions increases because I use a laptop" (M=3.74), "I stay involved throughout class because I use a laptop" (M=3.89), and "I communicate in class more with my instructor because I use a laptop" (M=4.07). The following section provides the mean values and standard deviation for each statement of the Laptop Impact Survey (Preservice Teachers Version). For individual statements, mean values greater than 5.00 were considered relatively positive and mean values lower than 5.00 were considered relatively negative.

Principle One: Student-Faculty Contact

Regarding Principle One: Student-Faculty Contact (see Table 19), preservice teacher respondents reflected some level of disagreement with all statements in this category, resulting in a mean lower than 5.00 for every statement. The highest level of disagreement as reported by preservice teachers was for the statement "I communicate in class more with my instructor because I use a laptop" (M=4.07).

Conversely, the highest level of agreement for statements of this principle was reported by preservice teachers for the statement “I communicate online (i.e., email) more with my instructor because I use a laptop” (M=4.95). The mean for this statement was still below 5.00.

Table 19

Preservice Teachers’ Perceptions/ Principle One: Student-Faculty Contact

Statement	M	SD	N
2. I communicate online (i.e., email) more with my instructor because I use a laptop.	4.95	2.83	135
3. I communicate more with my fellow students outside of class time because I use a laptop.	4.83	2.80	135
4. Overall, the quality of my communication with my instructor increases because I use a laptop.	4.54	2.79	134
1. I communicate in class more with my instructor because I use a laptop.	4.07	2.60	135

Principle Two: Cooperation Among Students

Within the category of Principle Two: Cooperation Among Students, the statement “Online activities that involve cooperation with my fellow students have increased because of the laptops,” received the highest level of agreement (M=5.59). The second highest level of agreement for student cooperation was reported for the statement “The quality of my class team products increases because I use a laptop” (M=5.28). Nevertheless, the statement “The quality of my interaction with fellow students increases because I use a laptop,” (M=4.77) received the lowest level of agreement by participating preservice teachers. The findings regarding preservice teachers’ perceptions of items for this principle are shown in Table 20.

Table 20

Preservice Teachers’ Perceptions/ Principle Two: Cooperation Among Students

Statement	M	SD	N
7. Online activities that involve cooperation with my fellow students have increased because of the laptops.	5.59	2.67	122
9. The quality of my class team products increases because I use a laptop.	5.28	2.85	120

Table 20 (continued).

Statement	M	SD	N
5. I do more cooperative work with my fellow students because I use a laptop.	4.94	2.73	122
6. In-class activities that involve cooperation with my fellow students have increased because of the laptops.	4.83	2.76	123
8. The quality of my interaction with fellow students increases because I use a laptop.	4.77	2.79	121

Principle Three: Active Learning

Preservice teacher respondents exhibited some level of disagreement with most statements about active learning. Relatively negative responses were reported by preservice teachers regarding the statements, “I stay involved throughout class because I use a laptop” (M=3.89), and “The amount of time I actively participate in class discussions increases because I use a laptop” (M=3.74). On the other hand, the highest level of agreement was reported for the statement “Using a laptop makes learning fun,” (M=6.10). Note that the greatest diversity of response, with the highest variability of response was given to the statements, “The amount of responsibility I have for my own learning increases because I use a laptop,” and “The amount

of control I have for my own learning increases because I use a laptop" (SD=2.92 for both). Details about other statement means and standard deviations are shown below.

Table 21

Preservice Teachers' Perceptions/ Principle Three: Active Learning

Statement	M	SD	N
12. Using a laptop makes learning fun.	6.10	2.44	122
14. My laptop makes taking class notes easier.	5.81	2.62	123
11. The amount of control I have for my own learning increases because I use a laptop.	5.03	2.92	123
16. My participation in online discussions increases because I use a laptop.	5.01	2.88	122
18. Using a laptop in class makes learning active.	4.96	2.66	122
19. My ability to relate the concepts and skills in my classes to real life increases.	4.67	2.63	119
13. Using a laptop makes learning more challenging.	4.57	2.57	122
20. My ability to reflect on class discussion and readings increases because I use a laptop.	4.52	2.76	122
10. The amount of responsibility I have for my own learning increases because I use a laptop.	4.50	2.92	121
17. I stay involved throughout class because I use a laptop.	3.89	2.79	122
15. The amount of time I actively participate in class discussions increases because I use a laptop.	3.74	2.74	121

Principle Four: Prompt Feedback

Within the category of Principle Four: Prompt Feedback, preservice teachers reported relatively negative responses for most statements of this principle (see Table 22). Though still at a rather neutral level, the highest level of agreement was for the statements “Using a laptop improved my ability to provide feedback to other fellow students” (M=5.06), and “Using a laptop improved my ability to provide feedback to my instructor” (M=5.05). However, students seemed to view feedback from their peers in a less positive light; the lowest level of agreement was reported for the statement “The quality of my fellow students’ feedback increases because of laptop” (M=4.42).

Table 22

Preservice Teachers’ Perceptions/ Principle Four: Prompt Feedback

Statement	M	SD	N
28. Using a laptop improved my ability to provide feedback to other fellow students.	5.06	2.70	120
27. Using a laptop improved my ability to provide feedback to my instructor.	5.05	2.80	121
22. I get prompt feedback from my instructor because I use a laptop.	4.90	2.94	121

Table 22 (continued).

Statement	M	SD	N
25. I get prompt feedback from my fellow students because I use a laptop.	4.85	2.74	121
23. The quality of my instructor's feedback increases because of her/his use of the laptop.	4.84	2.73	121
21. I get more feedback from my instructor because I use a laptop.	4.81	2.90	122
24. I get more feedback from my fellow students because I use a laptop.	4.60	2.78	121
26. The quality of my fellow students' feedback increases because of laptop.	4.42	2.64	120

Principle Five: Time on Task

Considering time on task brought the highest level of agreement by preservice teachers of all categories in the Laptop Impact Survey. The two statements, "I use my computer laptop on a daily basis" (M=7.99), and "I use my laptop to complete course assignments" (M=7.75) had very high positive responses. Other statements received relatively positive responses as well. The lowest level of agreement was reported for the statement "Using a laptop has increased the amount of time I spend doing course work" (M=5.36). Table 23 summarizes the findings of preservice

teachers' perceptions regarding items in this category.

Table 23

Preservice Teachers' Perceptions/ Principle Five: Time on Task

Statement	M	SD	N
29. I use my computer laptop on a daily basis.	7.99	2.10	121
31. I use my laptop to complete course assignments.	7.75	2.08	119
34. My ability to complete tasks at times that are convenient for me was increased because I use a laptop.	6.62	2.55	120
32. My laptop helped me complete my assignments promptly.	6.33	2.71	120
30. I found myself able to manage my time efficiently because I use a laptop.	5.47	2.83	121
33. Using a laptop has increased the amount of time I spend doing course work.	5.36	2.70	119

Principle Six: High Expectations

Preservice teachers provided varied responses on the topic of high expectations. Within this category, the highest level of agreement was reported for the statement "My instructors have higher expectations of my research efforts because I use a laptop" (M=5.38). Yet the statement "Using a laptop has increased my expectations of myself" (M=4.42), received the lowest level of agreement by

participating preservice teachers. The findings on preservice teachers' perceptions regarding items in this principle are shown in Table 24.

Table 24

Preservice Teachers' Perceptions/ Principle Six: High Expectations

Statement	M	SD	N
39. My instructors have higher expectations of my research efforts because I use a laptop.	5.38	2.64	118
38. My instructors have higher expectations of my performance because I use a laptop.	5.05	2.67	118
37. Using a laptop has increased my expectations of my institution.	4.97	2.81	118
36. Using a laptop has increased my expectations of my instructors.	4.76	2.76	118
40. Using a laptop makes me feel as if I am taking a more active part in my education.	4.68	2.75	116
35. Using a laptop has increased my expectations of myself.	4.42	2.70	118

In addition to the statements that participants responded to, subsequent open-ended questions asked, "Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?" Of the 87 (64%) preservice teachers who responded to this question, 27 (31%) reported positive

opinions, 44 (51%) reported negative opinions and 16 (18%) revealed mixed feelings or stated that they were not sure. A summary of preservice teachers' responses is presented in Table 25. Documentation of all responses to this open-ended question is provided in the transcripts included in Appendix G.

Table 25

Preservice Teacher Responses to the Open-Ended Question About Expectations

	Response	Frequency
Positive Responses (31%)	- Convenience (anywhere/anytime)	9
	- Learning tool	3
	- Helped doing assignments	3
	- Helped doing research	3
	- Interaction with classmates and teachers	2
	- Helped/forced him/her to master technology	2
	- Time management has improved	1
	- Can do a lot of cool things with laptop	1
	- Note taking has improved	1
	- It is what I thought it would be used for	1
	- Love Apple	1

Table 25 (continued).

	Response	Frequency
Negative Responses (51%)	- Too expensive to buy	10
	- Do not like Apple/MAC	9
	- I have my own laptop, why should I buy new one	6
	- Distraction tool	5
	- Rarely use them in class	4
	- Can use desktop for the same things	4
	- Technical problems (computer crash, virus)	3
	- Many professors do not make good use of them	2
	- Increase the time doing projects and assignments	1
	- Inconvenience (in carrying it)	1
	- Time consuming	1
	- Need more training on laptop and its software	1

Principle Seven: Diverse Talents & Ways of Learning

Preservice teachers revealed a variety of responses to the statements about diverse talents and ways of learning. As shown in Table 26, the highest positive response in this category was reported for the statement “I used the laptop to accommodate differences in learning styles” (M=5.29). On the other hand, the statement “Using a laptop increases the chance to get to know fellow students who are different from me,” (M=4.03) received the lowest level of agreement.

Table 26

Preservice Teachers' Perceptions/ Principle Seven: Diverse Talents & Ways of Learning

Statement	M	SD	N
43. I used the laptop to accommodate differences in learning styles	5.29	2.58	118
42. I was able to make connections between disciplines while doing research because I use a laptop.	4.58	2.70	116
41. Using a laptop increases the chance to get to know fellow students who are different from me.	4.03	2.63	116

Category Eight: General Statements

Preservice teacher respondents exhibited relatively positive responses regarding most statements in this category. The statements "I make effective use of the potential of laptop computers," and "I find it easier to do research using my laptop computer" (M=6.00 for both), received the highest level of agreement. However, the lowest level of agreement was reported by preservice teachers for the statement "My ability to better understand the ideas taught in class increases because of the laptop" (M=4.42). The statement "I think the laptop cost is

worthwhile” (SD=2.94), received the most diverse responses with the highest variability of response. The means and standard deviations of these and other statements are shown in Table 27.

Table 27

Preservice Teachers’ Perceptions/ General Statements

Statement	M	SD	N
49. I make effective use of the potential of laptop computers.	6.00	2.35	118
53. I find it easier to do research using my laptop computer.	6.00	2.73	118
46. Using laptops during class is a good idea.	5.64	2.66	118
48. Using a laptop works well with the way I like to learn.	5.62	2.65	117
51. I believe using a laptop and its related resources has enhanced my learning.	5.43	2.62	117
45. Overall, the quality of my work increases because of the laptop.	5.21	2.81	118
50. My instructor makes effective use of the potential of laptop computers.	5.09	2.62	117
44. Using a laptop encourages me to excel at the work I do.	4.95	2.87	116
52. I believe using a laptop and its related resources has enhanced my instructor’s teaching.	4.88	2.70	116
47. I think the laptop cost is worthwhile.	4.66	2.94	118
54. My ability to better understand the ideas taught in class increases because of the laptop	4.42	2.70	117

Preservice Teacher Responses to the Open-Ended Questions

Responses to the open-ended questions at the end of the Laptop Impact Survey were analyzed and grouped into emergent themes. Themes were considered significant when at least four comments were made on the same topic. Although the study was primarily based upon the analysis of quantitative survey data, narrative responses provided a richer and deeper understanding of the participants' perceptions of the impact of the Laptop Initiative as related to the teaching and learning environment.

The three open-ended questions at the end of the Laptop Impact Survey asked preservice teachers in what ways they feel the Laptop Initiative has been of greatest benefit to their learning, to list at least three things that instructors could do to improve the classroom learning and teaching environment using the laptop, and whether there was any other information they would like to share about their experience of using laptops. Of the 135 preservice teachers who participated in this study, the number of those who answered open-ended questions ranged between 57 and 77 for each question. The following section

describes some of the most important issues that were reported by preservice teachers.

Preservice teacher respondents were asked to describe the ways they feel the Laptop Initiative has been of greatest benefit to their learning. A total of 77 individuals (57%) responded to this open-ended question. Written responses ranged from one word to 97 words with an average of 21 words. Important issues demonstrated that the greatest benefits include convenience (15 comments), the ease of research, and access to resources on the Internet (10 comments). Table 28 shows the primary benefits that were considered by preservice teachers to be the greatest benefits of the Laptop Initiative to their learning. The benefits are presented in order of frequency.

Table 28

Preservice Teachers' Responses to the Open-Ended Question About the Greatest Benefits of the Laptop Initiative

Benefit	Frequency
Convenience	15
Research/ access to information	10
Easy to take notes	9
Improved my learning/ helped me excel / experience	9
Learning how to use some software (iPhoto, iMovie, Power Point..etc.)	8
Helped me stay organized/save time	7
Learning how to use MAC ud	6
Communication with instructors/peers/ others	4
Using my laptop in daily life /at school	4
Increase my confidence with integrating technology in the classroom	3
Have fun (watch DVDs and store MP3s)	3
Other benefits	5

Another issue that issue that has arisen from preservice teachers' responses was that laptop computers were not uniformly used in their classrooms. Different faculty members have different utilizations of laptops. Preservice teachers offered several examples of some practices in which the laptop was utilized and worked particularly well. These practices include finding information online, making PowerPoint presentations,

posting reflections on class readings, making iMovies, interacting with educational software, building an online portfolio and participating in online discussions with fellow classmates and the instructor. However, some preservice teachers reported that in some classes laptop computers were used sparingly or not at all. One preservice teacher noted, “I use it in class like twice a semester and that is not making it worth my money.” It seems that some faculty members limit the use of laptops during class, likely because of the off-task behavior which was described earlier. Another preservice teacher explained, “Just because I am using my laptop does not mean I am checking my email. Most professors would not let you have your laptop open because they thought you were chatting.”

Some preservice teacher respondents offered suggestions for improving the classroom learning and teaching environment using the laptop. Some preservice teachers asked for professors to use laptop computers more efficiently and find ways to use laptops in class, not just ask students to use them outside the classroom. Preservice teachers suggested additional classtime uses such as “doing online searches together or to research various topics that

relate to the class material”; “create a computer oriented activity to do in class;” and “Have quizzes that can be taken on a laptop.”

Some other technical suggestions provided by preservice teachers for faculty included making sure there is Internet access and the classrooms have enough outlets. In addition, some preservice teachers asked for more training. As one explained, “If UT is going to have students participate in this Laptop Initiative, there must also be a class that teaches you not only how to use it and use it effectively, but teaches? us ways it can be incorporated into the classroom. I don't understand why a laptop is more beneficial than any other type of computer.” More analysis and discussion of preservice teachers’ comments is presented in Chapter Five. Documentation of all responses to these open-ended questions is provided in the transcripts included in Appendix G.

Findings for Research Question Three

This section presents the results of the survey pertaining to research question three, “What are the similarities and differences in the perceived impact on teaching practices and the learning environment between faculty members and preservice teachers?” In general, participating faculty members were inclined towards agreement with each principle more than the preservice teachers were for all of the Seven Principles. As Figure 2 shows, mean scores for preservice teachers were below those of faculty members for each principle. As stated earlier, mean values for each Principle higher than 50.00 were considered relatively positive and mean values lower than 50.00 were considered relatively negative. Although some differences can be observed in the means between faculty and preservice teachers for each principle, statistically significant differences between the two groups were found only in Principle Five: Time on Task. This section provides details about the similarities and differences in the perceived impact of each principle and discusses the significance of the differences.

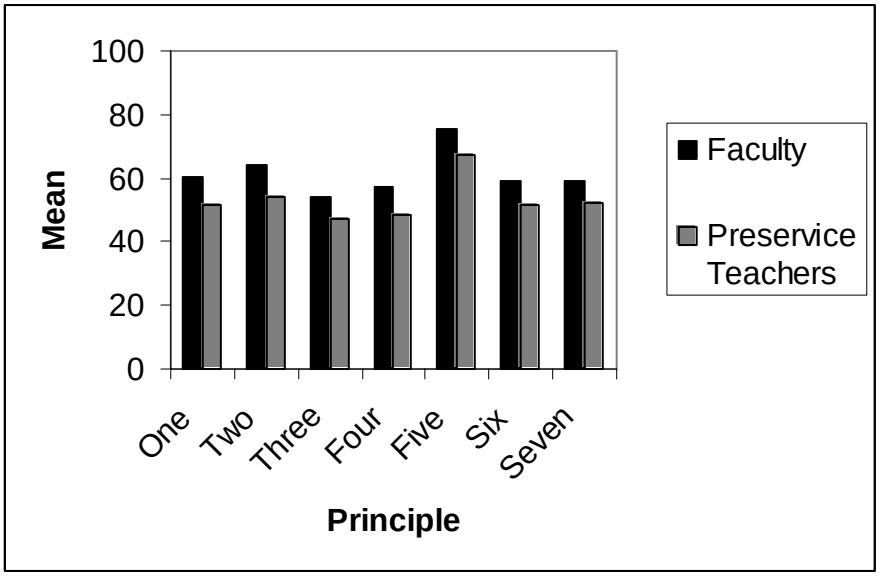

Figure 2. Comparison of the total means for each principle between faculty members and preservice teachers

Principle One: Student-Faculty Contact was perceived more positively by faculty than by preservice teacher respondents. However, it should be noted that the highest level of agreement reported by both faculty members and preservice teachers was in response to the second statement, which was about the increase in the amount of online communication (i.e., email) between faculty and students. On the other hand, both groups relatively disagreed that using laptops has increased in-class communication. For the other two statements about

communicating more with students outside of class time and the overall quality of communication, faculty perceptions were more positive than those of preservice teachers.

For Principle Two: Cooperation Among Students, both faculty members and preservice teachers reported the highest level of agreement with the third statement, which stated that online activities that involve cooperation among students have increased because of the laptops. It is important to also note that both groups reported the second highest level of agreement for the fifth statement about the increase of the quality of students' team products due to using laptops. As they did for Principle One, faculty members tended to have relatively higher level of agreement than preservice teachers did with statements of Principle Two.

Faculty members and preservice teacher respondents exhibited mixed levels of disagreement and agreement with statements of Principle Three: Active Learning. Both faculty members and preservice teachers reported the highest level of agreement and the highest levels of disagreement for the same statements. The highest level of agreement was reported by participating faculty and

preservice teachers for two statements, one stating that using a laptop makes learning fun and the other one stating that using laptops makes taking class notes easier for students. On the other hand, two statements received a relatively high level of disagreement by both faculty members and preservice teachers, one referring to students staying involved throughout class because of using laptops and the other addressing the increase in the amount of time students actively participate in class discussions. These two statements received means that were less than 4.00 by both groups, which indicates a relatively high level of disagreement.

Within statements of Principle Four: Prompt Feedback, faculty members tended to agree more than preservice teachers with each statement in this principle. The last statement in this category, about whether using laptops improved students' ability to provide feedback to each other, received the highest level of agreement by both faculty members and preservice teachers. Although the total means of faculty and preservice teacher responses for this principle reveal nine points of difference, no statistically significant differences were found between

the two groups.

Principle Five: Time on Task received the highest level of agreement of all the Seven Principles as reported by both faculty and preservice teachers. Both faculty and preservice teachers reported the highest level of agreement for two statements: one about using a laptop on a daily basis and the other about students using laptops to complete course assignments. All other statements in this principle received relatively high agreement ratings by both groups.

As was the case for most statements under the Seven Principles, faculty members tended to agree more than preservice teachers with statements of Principle Six: High Expectations. While the statement “Using a laptop has increased my expectations of my institution,” was ranked at the highest level of agreement by faculty, preservice teachers ranked it as almost neutral. It is also important to note that this same statement had the most diverse response with the highest variability of response by both groups.

For Principle Seven: Diverse Talents & Ways of Learning, both participating faculty and preservice

teachers reported the lowest level of agreement for the first statement that using a laptop increases students' chances to get to know other students who are different from them. In general, statements in this principle were among statements that received the lowest level of agreement compared with other statements in the Laptop Impact Survey.

Regarding Category Eight: General Statements, both faculty members and preservice teachers reported a relatively high level of agreement with the statement that it is easier for students to do research using their laptop computers. This statement received the highest level of agreement by faculty and the second highest level of agreement by preservice teachers. On the other hand, the statement that using a laptop encourages students to excel at the work they do received a relatively low level of agreement by both groups. While faculty reported a high level of agreement for the statement that the laptop cost is worthwhile, preservice teachers conversely reported a lower satisfaction rating.

Of the Seven Principles (Student–Faculty Contact, Cooperation Among Students, Active Learning, Prompt

Feedback, Time on Task, High Expectations, and Diverse Talents & Ways of Learning), statistically significant differences were found between faculty members and preservice teachers in Principle Five at the 0.05 level.

For Principle Five: Time on Task, the assumption by equal variances between groups was not met; thus an alternative version of the *t*-test that does not assume equal variances was used, t (44.48) =-2.69, p<.05. In addition, marginally significant differences were found between faculty and preservice teachers for Principle One Student-Faculty Contact, t (154) =-1.81, .05< p<.10 and Principle Two: Cooperation Among Students, t (136) =-1.80, .05< p<.10.

Although mean differences of seven to nine points were found between faculty and preservice teachers for principles Three: Active Learning (seven points), Four: Prompt Feedback (nine points), Six: High Expectations (eight points) and Seven: Diverse Talents & Ways of Learning (seven points), no statistically significant differences were found between the two groups. Table 29 presents the analysis of the significance between faculty and preservice teachers for each principle.

Table 29

Analysis of the Significance of the Differences Between Faculty and Preservice Teachers for Each Principle

Principle	*t*	*df*	*Two-Tailed p*
Principle One: Student–Faculty Contact	-1.81	154	0.07
Principle Two: Cooperation Among Students	-1.80	136	0.07
Principle Three: Active Learning	-1.16	129	0.24
Principle Four: Prompt Feedback	-1.44	135	0.15
Principle Five: Time on Task	-1.90	133	0.06
P5(Equal variances not assumed)	-2.69	44.48	0.01*
Principle Six: High Expectations	-1.26	134	0.21
Principle Seven: Diverse Talents & Ways of Learning	-1.40	134	0.17

* Significant at the .05 level

Additional Analysis

An analysis of the quantitative data leads to the conclusion that the individual perceptions among faculty members as well as preservice teachers varied widely. For example, for about 20-30% of faculty and 10-20% of preservice teachers, the response to most statements of the survey was “strongly agree,” but for the another 10-20% of faculty and 20-30% of preservice teachers, the response to

most statements of the survey was “strongly disagree.” The same divide can be found in faculty members, and preservice teachers’ responses to the open-ended questions. This divide led the researcher to do a further analysis of demographic factors that may have impacted respondents. First, no significant difference was found between faculty members with four or more semesters of experience teaching with laptop computers and those with less than four semesters of experience. For preservice teachers, on the other hand, it was found that those with three or more semesters of laptop experience expressed a higher level of agreement with the statements of the Laptop Impact Survey than did those who had only one semester.

For six out of the Seven Principles, faculty members with four or more semesters of experience teaching with laptops scored means that were higher than those with only three or fewer semesters of experience. Although some differences in the means between the two groups of faculty were observed, statistically significant differences were not found for any principle. It should be noted that the fact that each group included a small number of people may have limited the statistical power of determining

significance. Table 30 compares the means and analyzes the significant difference between Faculty Members groups using a *t*-test.

Table 30

Comparison of Means and Analysis of the Significance of the Differences Between Faculty Members by Their Experience with the Laptop Initiative

Principle	Mean		*t*	*Df*	*Two-Tailed p*
	3 semesters or less (9)	4 semesters or more (12)			
Principle One	54.78	66.96	1.25	19	.228
Principle Two	63.11	67.26	.473	18	.642
Principle Three	46.02	59.79	1.26	14	.230
Principle Four	55.30	62.36	.62	17	.545
Principle Five	76.00	75.64	-.07	18	.948
Principle Six	54.63	66.33	1.00	17	.331
Principle Seven	56.02	62.35	.82	18	.424

Table 31 shows that preservice teachers with two semesters of learning with a laptop scored means that were higher than did those who had only one semester. Furthermore, preservice teachers with three semesters or

more of laptop experience scored means that were higher than did those who had only one or two semesters. In fact, the ANOVA indicated significant differences in perceptions between beginning preservice teachers who had only one semester of experience with laptop computers and those who had taken classes with laptops for three semesters or more. For Principle One: Student-Faculty Contact, Principle Two: Cooperation Among Students, and Principle Four: Prompt Feedback, significant differences were found at the .05 level. Preservice teachers with three semesters or longer of laptop experience reporter higher agreement ratings for these principles (with means of 57.47, 63.59 and 58.40, respectively) than did those who had only one semester (with means of 44.90, 45.49 and 40.62, respectively). It should be noted also that preservice teachers with three semesters or longer of laptop experience scored higher total means for other principles even if statistically significant differences were not found. Table 31 shows the means, the standard deviation and the analysis of the significance for preservice teacher subgroups for each principle.

Table 31

Comparison of Means and Analysis of the Significance of the Differences Among Preservice Teachers by Their Experience with the Laptop Initiative

Principle	Experience with the Laptop Initiative	M	SD	F	P
Principle One	1 semester	44.90	21.38	4.22	.017*
	2 semesters	52.70	21.36		
	3 semesters or more	57.47	21.80		
Principle Two	1 semester	45.49	22.57	6.54	.002*
	2 semesters	53.72	23.18		
	3 semesters or more	63.59	22.27		
Principle Three	1 semester	41.57	21.91	2.95	.056
	2 semesters	47.56	22.30		
	3 semesters or more	54.14	24.50		
Principle Four	1 semester	40.62	22.87	5.453	.006*
	2 semesters	46.85	25.75		
	3 semesters or more	58.40	25.75		
Principle Five	1 semester	64.86	19.78	1.08	.344
	2 semesters	66.93	19.27		
	3 semesters or more	71.04	16.62		
Principle Six	1 semester	46.35	22.56	2.37	.098
	2 semesters	52.00	21.74		
	3 semesters or more	57.53	24.32		
Principle Seven	1 semester	47.37	20.19	2.37	.098
	2 semesters	52.01	21.46		
	3 semesters or more	57.65	21.80		

* Significant at the .05 level

This section concludes with a comparison of means between faculty and preservice teachers groups by their level of experience with the Laptop Initiative. Figure 3 shows that preservice teachers with two semesters of learning with a laptop (N=34) scored means that were higher than did those who had only one semester (N=55). Also, preservice teachers with three semesters or more of laptop experience (N=43) scored means that were higher than did those who had only one or two semesters. Furthermore, faculty (N=22) scored means that were close to the means of preservice teachers with three semesters or more of laptop experience but higher than the means of preservice teachers with one or two semesters of laptop experience.

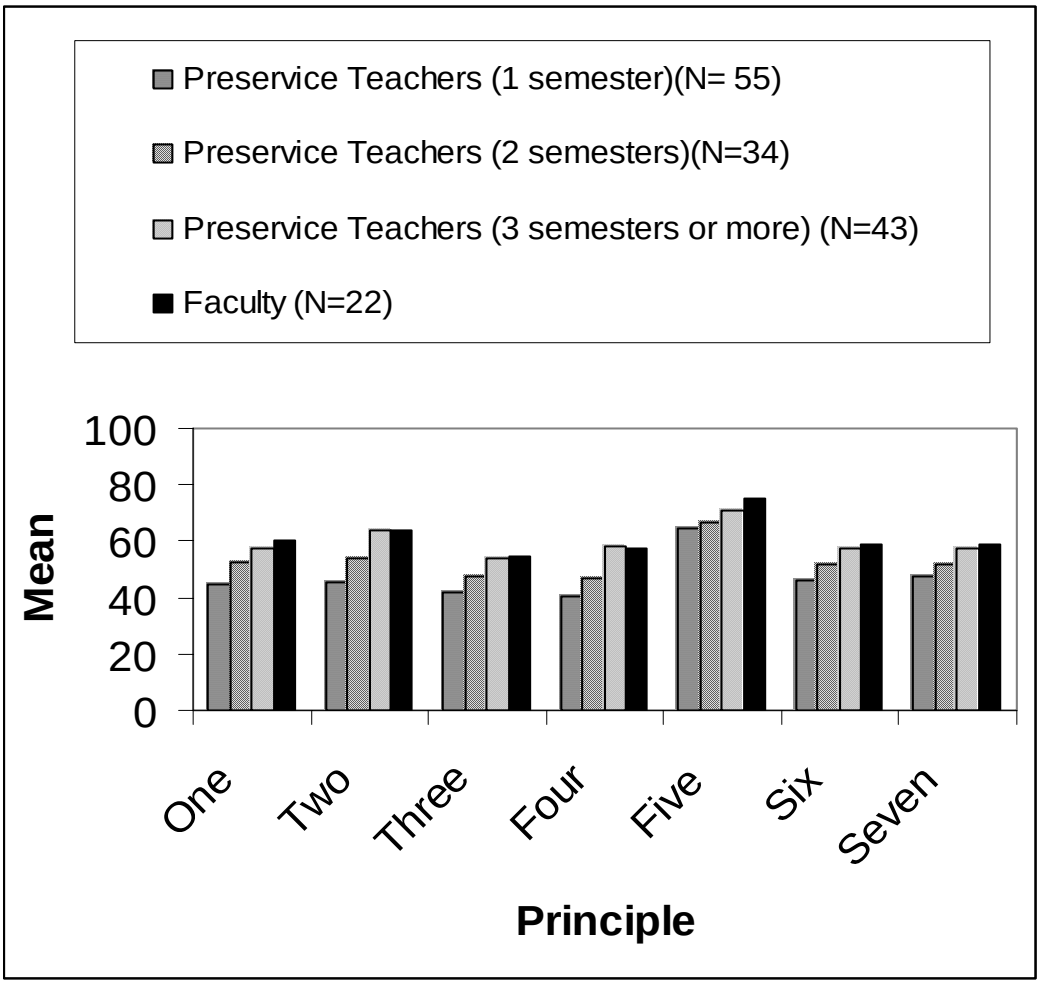

Figure 3. Comparison of the total means between faculty members and preservice teachers groups by their level of experience with the Laptop Initiative

Summary

This chapter presents the findings of the study. It begins with a description of the demographic characteristics of the study sample. After that, it explains the findings for each of the three research

questions. The study findings showed that faculty members had a more positive perception of the impact of the Laptop Initiative than did preservice teachers. Descriptive and inferential statistics were used to analyze the study data. Through the use of narratives and tables, the data obtained from the Laptop Impact Survey were presented. Next, a summary of the study and a discussion of the findings are presented in Chapter Five, along with recommendations and suggested areas for further study.

CHAPTER 5

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Overview

This chapter presents a summary of the study and conclusions drawn from the data analysis and the study findings. Discussion corresponding to the responses to the research questions and recommendations for practice and future studies are also provided.

Summary of the Study

The main purpose of this study was to understand faculty and preservice teacher perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment. To provide a better understanding of faculty members' and preservice teachers' experience concerning the Laptop Initiative, the following research questions guided this study:

(1) What are faculty members' perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment?

(2) What are preservice teachers' perceptions of the impact of the Laptop Initiative on teaching practices and the learning environment? and,

(3) What are the similarities and differences in the perceived impact on teaching practices and the learning environment between faculty members and preservice teachers?

This study targeted two groups: faculty members and preservice teachers in the Professional Development Sequence in the College of Education at the University of Texas at Austin. In this study, a web-based survey was developed to explore faculty and preservice teachers' perceptions of the impact the Laptop Initiative has made on teaching practices and the learning environment. The survey was designed based on Chickering & Gamson's (1987) work that identified seven key instructional practices that have been found to influence teaching and learning environments. According to Chickering & Gamson (1987), good

practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages active learning; (4) provides prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; and (7) respects diverse talents and ways of learning.

The survey instrument was named “The Laptop Impact Survey,” and included questions about demographics, 54-58 statements based on the Chickering & Gamson’s Seven Principles, and several open-ended questions that were developed to elicit more comprehensive responses from respondents. The Laptop Impact Survey has two similar versions: one for faculty members and one for preservice teachers.

The Laptop Impact Survey was piloted in April 2004 to test the feasibility of the study design and to ensure the effectiveness of the study tool, and feedback was solicited from the participants. After testing the reliability and validity of the survey and making some adjustments, the Laptop Impact Survey was administered in November 2004 to faculty and preservice teachers to explore their perceptions of the impact of the Laptop Initiative on

teaching practices and the learning environment. Participants accessed The Laptop Impact Survey through an online website and completed it electronically. The rate of return of the Laptop Impact Survey was 48% for faculty and 38% for preservice teachers.

The data obtained from the sample were analyzed and reported using descriptive and inferential statistics. Research questions were answered by computing the frequency, composite means and standard deviation for each statement and category. Also, the *t*-test and analysis of variance (ANOVA) were used to find out whether there were significant differences among perceptions of faculty and preservice teachers and their subgroups. For the open-ended questions of the survey, written responses were listed and similar responses were grouped into emergent themes. These narrative responses were used to expand upon the quantitative findings.

The data collected revealed that for participating faculty members, 90.9% were White, 68.2% were female, and most ranged in age between 41 and 50 years. The majority of faculty reported experience with teaching with the laptop for four semesters or more. On the other hand,

participating preservice teachers were 82% female and the majority of them reported that their age was less than 25 years. Also, preservice teachers reported a wide range of specialization areas of study, but the largest number reported was social studies (18.3%). As for the ethnicity/race, 72.4 % of preservice teachers were White, 14.2% were Hispanic and 9.7% were Asian.

The findings of the study showed that faculty respondents expressed a moderately positive view of the impact of the Laptop Initiative on the teaching and learning environment. Faculty member respondents had the most positive perceptions for Principle Five: Time on Task (M=75.44). On the other hand, Principle Three: Active Learning had the least positive perceptions as reported by faculty (M=54.32). Regarding individual statements, the highest level of agreement reported by faculty was for the statements, “I use my laptop to plan course activities and assignments,” (M=8.48), “My students use laptops to complete course assignments,” (M=8.43), and “I use my computer laptop on a daily basis” (M=8.38). On the other hand, the lowest reported level of agreement by faculty was for the statements “The amount of time my students actively

participate in class discussions increases because they use laptops," (M=3.50), and "My students stay involved throughout class because they use laptops" (M=3.67).

In their narrative responses, faculty members endorsed the use of laptop computers because of convenience, ease of communication, ease of course planning and organization, ability to help students do projects and assignments, and availability of tremendous resources within the classroom. However, some faculty reported mixed feelings and expressed some reservations regarding some issues related to current laptop use. One key theme that emerged from faculty responses called attention to unanticipated consequences, such as off-task behavior during class time. Faculty members were unhappy with the way some students use their laptops during class time.

Preservice teacher respondents reported a lower level of agreement on the impact of the Laptop Initiative on the teaching and learning environment than did faculty members. Similar to faculty, participating preservice teachers had the most positive perceptions for Principle Five: Time on Task (M=67.19). On the other hand, Principle Three: Active Learning and Principle Four: Prompt Feedback were ranked

with only a neutral to negative perception (M=47.34 and 48.51 respectively). Regarding individual statements, the highest level of agreement reported by preservice teachers was for the statements “I use my computer laptop on a daily basis,” (M=7.99), “I use my laptop to complete course assignments,” (M=7.75), and “My ability to complete tasks at times that are convenient for me was increased because I use a laptop” (M=6.62). On the other hand, the lowest reported agreement by preservice teachers was for the statements “The amount of time I actively participate in class discussions increases because I use a laptop,” (M=3.74), “I stay involved throughout class because I use a laptop,” (M=3.89), and “I communicate in class more with my instructor because I use a laptop” (M=4.07).

Similar to faculty, preservice teachers reported that they endorsed the use of laptop computers because of convenience, help in doing assignments, help in conducting research and accessing online resources, ease of communication, improvement in note taking and help staying organized. However, preservice teachers raised some issues and concerns such as that laptops are a distracting tool

during class, expensive to buy and not utilized well by some instructors.

When comparing faculty members' and preservice teachers' perceptions regarding the impact of the Laptop Initiative on the teaching and learning environment, the study found that participating faculty members were inclined towards agreement with the statements more than were preservice teachers for all of the Seven Principles. However, statistically significant differences between the two groups were found only in Principle Five: Time on Task, at the 0.05 level.

As for the influence of experience with teaching and learning with a laptop, the study found that there was no significant difference between faculty members with four semesters or more and those with less than four semesters of experience with teaching with laptop computers. However, the study found that preservice teachers with three semesters or more of laptop experience expressed a more positive perception of the impact of the Laptop Initiative than did preservice teachers who had only one semester of experience.

Discussion of Findings

The analysis of faculty and preservice teachers' quantitative data and narrative responses showed that participating faculty members expressed more positive perceptions than did preservice teachers for all of the Seven Principles. The average mean for overall faculty perception was 61.38, which is slightly positive whereas the average mean for preservice teachers was 53.13, which is almost neutral (mean values higher than 50.00 were considered relatively positive and mean values less than 50.00 were considered relatively negative). Therefore, it can be concluded that faculty members, in general, perceived the impact of the Laptop Initiative on the teaching and learning environment more favorably than did preservice teachers.

This finding could be attributed to the experience factor. Faculty members who experienced the use of laptops over a longer time period and realized their potential impact on teaching and learning expressed positive opinions. This explanation is reinforced by the significant difference found between beginning preservice teachers who had experienced learning with laptops for only the first

semester and those who had three semesters or more semesters of experience learning with laptops; as explained in Chapter Four, preservice teachers with three or more semesters of laptop experience expressed higher level of agreement with the statements of the Laptop Impact Survey than did those who had only one semester. This significant difference suggests that over time preservice teachers will learn more sophisticated uses of laptops, realize the potential of laptops and become increasingly comfortable with them. Also, this finding bears out a previous statement of lessons learned from the Laptop Initiative, as outlined by Resta and others. According to Resta et al. (2004), “A year makes a difference. The first semester the students were wary of the program. The second semester, they were resigned to the requirement. The third semester, students were excited about the possibilities” (p. 4).

Variation of Responses

The analysis of quantitative data leads to a conclusion that the perceptions among individual faculty members as well as preservice teachers varied widely. For example, for about 20-30% of faculty and 10-20% of

preservice teachers, the response to most statements of the survey was “strongly agree,” but for other 10-20% of faculty and 20-30% of preservice teachers, the response to most statements of the survey was “strongly disagree.” The divergent responses indicate that there is a divide between those who embrace the technology and those who express a preference for more traditional classroom methods.

Responses to the open-ended questions by both faculty members and preservice teachers support this conclusion. Specifically, faculty member responses to the open-ended questions include comments that ranged from very positive (such as “Without it, I don't know how I'd teach,” and “My use of the laptop is becoming more ‘seamless’ in my classroom, making my instruction more effective.”) to negative (such as “I do not think that laptops in the classroom are necessary.”). Similarly, some preservice teachers expressed very negative attitudes toward laptop computers. Strongly negative comments were included, such as “The laptop has been a complete waste of time,” “it was a huge waste of money,” “it's not really doing anything,” and “I think there is no possible way a laptop helped me learn better.” In contrast, some other comments by

preservice teacher respondents were very positive, such as "Love it," "it has helped or forced me to master technology that I may not have otherwise," and "it has helped me excel in my education classes."

Increase in Online Communication and Activities

The findings of this study showed that both faculty and preservice teachers reported the highest level of agreement for the statement that there was an increase in the amount of online communication between instructor and students (Principle One: Student-Faculty Contact), as well as an increase in online activities that involve cooperation among students (Principle Two: Cooperation Among Students). These findings were not a surprise. The biggest success story in the realm of technology has been that of time-delayed (asynchronous) communication. The use of email, online conferencing, and the World Wide Web increases opportunities for both faculty and students to communicate quickly and easily. Also, online communication is further empowered by the fact that the campus is equipped with wireless access to the Internet and each faculty and preservice teacher has a TeachNet account,

which includes several features such as email, class folders, a chat feature and conferencing capability.

This finding about online communication is supported by the narrative responses of both faculty members and preservice teachers. One of the greatest benefits of the Laptop Initiative that was conveyed by both groups was improvement in students' communication with their instructors/peers/ others. In describing an in-class activity in which laptops were utilized and worked particularly well, one faculty member stated, "My students have done on-line chats in class. I like it because it allows (requires) everyone to participate at the same time, which they can't do ordinarily. It gets the quiet ones to 'speak up' and share their ideas that the rest of us wouldn't get to hear otherwise."

The Quality of Students' Team Products

According to the College of Education website (2004), the major goal of implementing the Laptop Initiative is to enhance learning in technologically-rich classrooms. Interestingly, both faculty and preservice teachers reported the second highest level of agreement for the

statement under Principle Two that indicated that the increase of the quality of students' team products was due to using laptops (with means of 6.43 and 5.28, respectively). This finding points to a key benefit of laptops frequently mentioned in the literature; laptops have the potential to improve the quality of learning. According to Chickering and Ehrmann (1996), technology helps increase opportunities for students to interact and cooperate with fellow students.

Learning Enhancement

Faculty and preservice teachers reported a relatively high level of agreement (with means of 6.62 and 5.43 respectively) for the statement that using a laptop and its related resources has enhanced students' learning (Category Eight: General Statements). This finding regarding learning enhancement is similar to the students' perception at Floyd College which was reported by Lord and Bishop (2001), which indicates that 59% of students said that using a laptop and its related resources enhanced their learning.

Active Learning

For Principle Three: Active Learning, it was noted that both faculty and preservice teachers reported the highest level of agreement for the statement about using a laptop makes learning fun, followed by the statement that using laptops makes taking class notes easier for students. These findings are supported by some narrative responses and parallel those from prior research such as Lord and Bishop (2001). Several preservice teachers considered greater ease of taking notes as one of the greatest benefits of the Laptop Initiative. One stated, “I like taking notes on my laptop because I can always go back and read the notes and make changes accordingly. It is effective in class because it helps me pay attention and I don’t have to worry about reading my handwriting if I am writing too fast.” Another one stated, “I actually expected it to be a burden; however, my note taking has improved 100%, my time management has improved, and my performance even with the smallest task has improved.” While several preservice teachers identified note-taking on laptops as an improvement, one preservice teacher said that she learned better by taking notes by hand. She explained, “I found

that taking notes on the laptop is cumbersome because it is difficult to draw graphs etc, and to quickly add extra notes throughout lecture to something that you may have already taken notes on, also you cannot easily flip through pages and find what you are looking for, you are limited to seeing only sections of a page on the computer screen as a opposed to seeing a whole entire paper page in front of you."

While preservice teachers were about neutral (M=4.57) that using laptops makes learning/teaching more challenging (Principle Three: Active Learning), faculty expressed relatively positive responses to the same statement (M=6.00). Teaching with laptops posed a real challenge to many faculty members. In their narrative responses, some faculty supported the view that laptop computers brought real challenges and can fundamentally change the nature of college instruction. One faculty member stated, "I also think it's made teaching more challenging, which I find interesting and motivating. I have been teaching a particular PDS class for 10 years, and it's never the same two times in a row. The laptops have helped me keep things

fresh and interesting for me, and I think that keeps the students more interested, too.”

Off-Task Behavior

A critical issue that was spotlighted in response to one of the quantitative statements and in many comments to the open-ended questions was about off-task behavior during class time. Both faculty members and preservice teachers reported a relatively high level of disagreement (M=3.67 and 3.89 respectively) with the statement that students stay involved throughout class because of using laptops (Principle Three: Active Learning). This strong response was aided by the many comments to the open-ended questions, especially by faculty. Almost 65% of participating faculty expressed their unhappiness with the fact that laptops distract students who use their laptops during class time to check email and surf the net. As one faculty expressed, “It’s a huge problem!” Another faculty stated, “Laptops also serve as major tools for off-task behavior in class ... shopping, gaming, emailing. During off-campus classes, I find students more engaged without the distraction of the WWW.” One preservice teacher described the situation: “I

look around me and I observe people checking their email, doing their audit...” Another preservice teacher explained, “Having a laptop in class makes it more likely that I will not pay attention to lecture - games, the Internet, email etc too tempting.”

This finding about off-task behavior is aligned with the finding of other studies reviewed in the literature in Chapter Two. For example, in her observation of classrooms utilizing laptops, Anderson (2001) reported that she “was stunned by the amount of class time students spent off-task. Off-task behavior ranged from playing games and emailing to viewing scantily clad women” (p. 113). She attended several classrooms across divisions and noted that “most students with computers in classrooms were off-task a majority of the time” (p. 113). According to Node Learning Technologies Network (as cited in Kontos, 2002), network and e-mail availability in class may create problems such as online chatting and computer game playing. Certainly, the issue of off-task behavior needs to be addressed and solutions need to be considered to help diminish this challenge. Solutions may include limiting Internet use in the classroom, including more attractive in-class

activities, limiting the number of students enrolled in a class, and/or offering more break times so that students can have free time to check their email and surf the Internet. One faculty member asked for a significant rethinking of using laptops in the classroom. She explained, “To incorporate laptops without a significant rethinking has been frustrating to me. I use laptops extensively and fairly innovatively, yet I feel that, to simply adapt the laptop to my old teaching style has not been effective. One example I'm sure you'll hear over and over is dealing with students who are surfing (checking email, browsing the web, etc.) during class in ways that take them off task. Since it is virtually impossible to stop this (I've tried) I believe the solution has to do with a significant reconfiguration of the learning experience and the kinds of responsibilities I expect students to take on.”

The Quantity, Quality and Promptness of Feedback

The fourth principle for good practice in university teaching is related to prompt feedback. According to Chickering & Ehrmann (1996), the use of technology helps

teachers quickly provide feedback in many ways. The findings of this study showed that faculty members reported a relatively high level of agreement for statements of this principle, which were about the quantity, quality and promptness of feedback between instructor and students and among students themselves. However, preservice teachers reported lower agreement than did faculty. On the other hand, the last statement in this category, that using laptops improved students' ability to provide feedback to each other, received the highest level of agreement by both faculty members and preservice teachers (M=6.67 and 5.06 respectively). In describing an in-class activity in which the laptop was utilized and worked particularly well, one faculty member used a Blackboard multiple choice quiz to test whether students understood a specific concept. She was able to get an immediate sense of what students understood and did not understand. This activity was effective "because I got immediate detailed feedback about students' understanding and could tailor my comments."

Time Management

Learning to manage one's time is a critical practice for both faculty and students. According to Chickering and Ehrmann (1996), technology can dramatically improve time on task for students by making studying more efficient. Faculty and preservice teachers reported a relatively high level of agreement (M=6.29 and 6.62 respectively) with the statement that their abilities to plan (for faculty) and complete (for preservice teachers) tasks at times that are convenient for them was increased because of using laptops (Principle Five: Time on Task). This was supported by several responses to the open-ended questions by both faculty and preservice teachers. Faculty and preservice teachers appreciated the flexibility of time offered by laptop use. Similarly, some faculty members and preservice teachers addressed the issue of improved practices of organization as an outcome of using laptops. When asked about the greatest benefits of using laptops, one of the most common responses by faculty and preservice teachers was that the Laptop Initiative helped them become more organized. As noted in the literature review (Desmarais & Luther, 1997; Kariuki, 2000; Kontos, 2001; Kontos, 2002;

Bianchi, 2004), flexibility, convenience and organization were considered as some of the key benefits of laptop computing.

Convenience

Another aspect of the Laptop Initiative to which both faculty and preservice teachers overwhelmingly responded favorably was convenience. One preservice teacher stated, “The general convenience of being able to access my documents and work just about anytime, anywhere, is what I find most useful about having a laptop.” Another preservice teacher stated, “I use my laptop for everything—from taking notes in class to making presentations for assignments. I even use it on the field with my kids. It works well for me because it is portable and easy to use.” Another stated a similar response: “When I am riding the bus, I can do work on my laptop and have at least half my assignment complete. I think it is effective because I can use it whenever I need to.”

Conducting Research

In addition, the laptop computer and its wireless Internet access has changed the way preservice teachers

conduct research and complete projects. Participating faculty and preservice teachers reported a relatively strong level of agreement with the statement that it is easier for students to do research using their laptop computers (M=7.33 and 6.00 respectively). Also, some preservice teachers identified laptop access to the Internet for conducting research as the second of the greatest benefits of the Laptop Initiative. This finding is consistent with Anderson (2001) who reported that students endorsed the use of laptop computers because of convenience, ease of communication, and accessible research. Similarly, most students at the University of Minnesota at Crookston felt that laptops helped them improve their research skills (Kontos, 2002). It is important to be cautious about the ease offered by laptops for doing research. As one faculty stated, “Just because a student does research more easily doesn't mean that the quality of the research is higher than it would have been. I have seen an increase in mediocre work as a result of students believing that downloading some information off the Internet and making it look fancy is all they need to do.”

Financial Concerns

An additional issue that has arisen from responses to a survey statement and the open-ended questions, especially by preservice teachers, was the issue of cost. The statement “I think the laptop cost is worthwhile (Category 8: General Statements),” received a lower satisfaction rating by preservice teachers (M=4.66) as compared to faculty members (M=6.92). Narrative responses by some preservice teachers were negative about the laptop and additional required software, indicating that it is expensive to purchase. It seems that the issue of cost consequently had a strong negative impact on some preservice teachers’ perceptions about the influence of the Laptop Initiative on teaching practices and the learning environment.

The negative perception related to cost supports the position presented in the literature that the financial challenge remains an important barrier associated with using laptop computers (Kontos, 2002). However, potential solutions need to be reviewed and considered. One faculty member suggested, “Make the laptops affordable to all students or better advertise and support a loaner program

for low income students.” Other solutions may include allowing students who already have laptops to use their own and/or establishing hardware and software requirements and giving students the freedom to purchase any laptop they like. One preservice teacher suggested, “I think it would be helpful to have a message board available for students who need or want to buy a Mac laptop, or are looking to sell theirs after they complete the u-teach program. It would be helpful to be able to contact people to either sell your laptop, or buy a used one at a cheaper price than UT sells them.”

Faculty Utilization of Laptops

When asked about their instructors’ use of laptops, preservice teachers were divided on this issue and the total mean for the two related statements represented a rather neutral perception. The statement that instructors make effective use of the potential of laptop computers and the statement that using a laptop and its related resources has enhanced teaching received lower agreement ratings by preservice teachers (M=5.09 and 4.88 respectively) than by faculty members (M=6.95 and 6.86 respectively). The

narrative responses of some preservice teachers indicated that faculty were required to use the laptop by the institution and this resulted in some faculty making irrelevant uses of the laptop just to meet a requirement. As one preservice teacher suggested, “[faculty should] use computers with a purpose. Don't just include the laptop because 'you have to.' Do something of value with them.” Another preservice teacher noted, “The activities are obviously designed only to make use of the laptops, rather than to increase the quality of our learning.” Another one stated, “Some teachers spend more time trying to teach us how to do a project on the laptop than actually learning about teaching.” Overall, this issue about faculty use is aligned with the findings of Resta and others. According to Resta et al. (2004), “Faculty should not use technology just because they can. Faculty should choose to use it when it adds value to their teaching” (p. 4).

Institutional Support

The final issue to be discussed from the study’s findings is related to institutional support and training. It was apparent from the data, particularly from the

narrative responses to the open-ended questions by both groups, that there is a need for more training and additional technical support. One preservice teacher stated, “There needs to be more training on what we have on [our laptops], because I have felt that I don't think we are using them to their highest ability.” Another one added, “There must also be a class that teaches you not only how to use [the laptop] and use it effectively, but teach us ways it can be incorporated into the classroom. I don't understand why a laptop is more beneficial than any other type of computer.”

It was noted earlier that the findings of this study showed that preservice teachers with three semesters or more of laptop experience expressed a more positive view of the Laptop Initiative than did those who had only one semester of experience. Thus, emphasizing the use of orientation and regular training sessions may help preservice teachers realize the potential of laptops early in their course work and become increasingly comfortable with them.

As for technical support, some faculty members requested additional hardware and software support.

Hardware includes portable routers, projectors and cables, and software such as music writing software and Adobe Illustrator. Also, as one faculty noted, it is important to have adequate memory installed in the machines. Another faculty member asked for staff support during the break "or at least list a contact person or phone number for reaching someone during breaks." To be sure, ongoing technical support is crucial to the success of the implantation of the Laptop Initiative.

From the discussion, it appears that many of this study's findings are consistent with previous research. In addition, numerous findings have enriched the existing literature with regard to the positive and negative impact of teaching and learning with laptop computers. The findings of this study suggested that in such an implementation program, there may be some factors that influence the willingness of faculty and preservice teachers to use laptop computers. Understanding these factors could be critical towards the successful implementation of teaching and learning with laptop computers. To conclude, the findings of this study, although limited to the faculty and preservice teacher

sample in one teacher preparation program, point to the possible benefits and challenges of introducing specific technology into educational programs. If the Laptop Initiative is to expand so as to achieve its full potential in higher education, it will be necessary to address the perceptions and concerns of faculty members and preservice teachers.

Recommendations

Responses to the research questions that guided this study suggest a number of professional concerns. In general, participating faculty and preservice teachers in the Professional Development Sequence (PDS) at the University of Texas at Austin voiced acceptance of using laptop computers as a tool in teacher preparation, but expressed reservations about specific aspects of use. The following recommendations for practice and future research are based on the study findings.

Recommendations for Practice

Effective instruction cannot take place in the absence of adequate institutional support. As institutions expand

the use of laptop computing, the role of institutional policies and support will become even more important for the success of laptop initiatives. The findings of this study support several recommendations regarding institutional policies and priorities. First of all, institutions of higher education should emphasize the use of orientation sessions for students entering the program. The findings of this study showed that preservice teachers with three semesters or more of laptop experience expressed a more positive view of the Laptop Initiative than did those who had only one semester of experience. As preservice teachers complete the first two semesters and experience several class settings and instructors, they begin to realize the potential of laptops and become increasingly comfortable with them. An orientation session will help familiarize students with the use of the technology and its considerable potential. Also, additional technical support and regular training sessions are needed for faculty to become proficient and fluent in the application of computer technology across the curriculum.

Secondly, institutions of higher education should re-evaluate the cost of laptop computers and the required

software. At the same time, it is also important that institutions of higher education inform learners about why they are required to buy a laptop and explain the potential benefits of using it. To be sure, the quality of education needs to be perceived by students as cost-effective. Therefore, proponents of an initiative might consider supporting a loaner program for low income students, negotiating a student rate for laptops through a commercial company, allowing students who already have laptops to use their own, and/or establishing hardware and software requirements and giving students the freedom to purchase any laptop they like.

More than half of participating faculty identified off-task behavior as a key challenge to teaching and learning with laptops. This issue needs to be addressed and solutions need to be considered to help meet the challenge. Solutions may include limiting Internet use in the classroom, including more attractive in-class activities, limiting the number of students enrolled in a class, and/or offering more break times so that students can have free time to check their email and surf the Internet. Further investigations and discussions into this important issue

need be taken into consideration by educators and policy makers.

Another recommendation is that institutions of higher education seeking to implement laptop initiatives as a part of the teacher education program of study should entice faculty to take full advantage of laptop computers by offering an incentive plan. This study found that laptop computers were not uniformly used in classroom. Different faculty members utilize laptops differently. Rewards and incentives may encourage reluctant faculty members to integrate the use of laptops into instruction more effectively. Incentives could be in the form of equipment, monetary rewards, release time, and so on.

Finally, it is important for educators and policy makers to maintain regular dialogue with faculty and preservice teachers to ensure that their needs and concerns are attended. If instructional technologists and technology planners wish to encourage increased use of laptop computers in teaching and learning in higher education, they must recognize the opinions and concerns of faculty members and preservice teachers.

Recommendations for Future Research

In order to determine whether the data collected in this study are generalizable to other teacher preparation programs, research similar to this investigation should be conducted in other programs implementing a laptop initiative. To increase accuracy, future research should use a larger sample and broader demographic representation of faculty and students. According to Gall et al. (1996), the larger the sample is, the greater the statistical power when assuming that the other factors are held constant. In addition, future research should examine the differences in faculty and preservice teacher perceptions based on demographic factors such as gender, ethnicity, age, experience and academic discipline.

Furthermore, to examine if faculty and preservice teacher perceptions changes over time, future research could attempt to replicate this study but on a long-term basis. Similarly, long-term research could be conducted to track preservice teachers into their careers and assess the level of laptop use that they demonstrate in their classrooms.

Additional studies are needed to determine the specific skills that are required to teach or study using laptop computers or to determine whether using laptops requires new teaching methodologies. Finally, it is recommended that the effectiveness of teaching and learning with laptops as compared with traditional classrooms continue to be studied, focusing specifically on learning outcomes. Teaching and learning with laptop computers will never be completely accepted in the higher education community until considerable evidence of the efficacy of laptop computers in this setting is provided.

APPENDIX A THE LAPTOP IMPACT SURVEY- FACULTY VERSION

The Laptop Impact Survey (F)

Informed Consent to Participate in Research

IRB# 2004-09-0056

Informed Consent to Participate in Research

Dear Faculty Member,

Thank you for your interest in this study titled "The Laptop Initiative: A Study of Change in Teaching Practices and Learning Environment in Higher Education from the Perspectives of Faculty and Preservice Teachers." Please read the information below, print a copy of this form for your records, and contact the researcher or his co-chairs about anything you do not understand before deciding whether or not to take part. Please don't hesitate to call or email Abdulaziz Bintaleb, Ph.D. candidate/ Department of Curriculum and Instruction (512.577.AZIZ; aziz01@mail.utexas.edu); Cinthia Salinas (512.232.3539; cssalinas@mail.utexas.edu); or Paul Resta (512.471.4014; resta@mail.utexas.edu).

The Laptop Impact Survey was developed based on Chickering & Gamson's (1987) work that identified seven key instructional practices that have been found to influence teaching and learning environments. According to Chickering & Gamson (1987), good practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages active learning; (4) provides prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; and (7) respects diverse talents and ways of learning. You will be asked to answer a series of questions related to your teaching experience with the laptop initiative in regard to each practice mentioned above. Based on the pilot study that was conducted in the fall 2004, the survey will take approximately 10-15 minutes to complete. Your participation in this online survey is entirely voluntary. Responses to the Laptop Impact Survey will remain entirely confidential.

The primary benefit of taking the Laptop Impact Survey is the opportunity to reflect systematically on your teaching experience in a one-on-one computing environment. Your input will help the College of Education modify and improve the laptop initiative. This study involves minimal risk to you. Taking the Laptop Impact Survey will only cost you the time it takes to complete it. You will not receive compensation for taking the Laptop Impact Survey. You will not be asked any questions of a personal nature. Your participation will not affect your current or future relationship with the University of Texas at Austin. The researcher will not benefit from your participation in this study beyond publishing and disseminating the results of the analysis.

Consent to Participate in the Laptop Impact Survey:
By clicking on the "Next" button:
- you have read the above information about this study's purpose and procedures;
- you have been given the opportunity to contact the researcher or his co-chairs with any questions you have about the study;
- you are 18 years of age or older; and
- you voluntarily agree to have your responses included in this study.

If you do not consent to participate, please stop here and do not click the "Next" button.

Thank you for your time and input!

I agree to participate in this study. Click here

The Laptop Impact Survey (F)

Which certification level(s) do you teach?

- Early Childhood to 4th Grade certification
- Middle Grades certification (4th to 8th grade)
- Secondary certification (8th to 12th grade)
- All-level certification (early childhood to 12th grade)

Which Subject do you teach?

- Mathematics
- Science
- Social Studies
- Kinesiology
- Special Education
- Liberal Arts
- English Language Arts
- Languages other than English
- Computer science
- Applied Human Learning
- Reading
- School Organization & Classroom management
- Other (please specify)

Your gender:

- Female
- Male

Your race/ethnicity:

- African American
- Asian
- Hispanic
- Native American
- White
- Other (please specify)

Your age:

- Less than 40 years
- 41 to 50 years
- 51 to 60 years
- 61 years and older

For how many semester(s) did you use a laptop computer in your teaching?

1
2
3
4 or more

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 1 : Students–Faculty Contact

1. I communicate in class more with my students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

2. I communicate online (i.e., email) more with my students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

3. I communicate more with my students outside of class time because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

4. Overall, the quality of my communication with my students increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

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The Laptop Impact Survey (F)

Principles 2-5

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 2 : Cooperation Among Students

5. My students do more cooperative work with each other because they use laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

6. In-class activities that involve cooperation among students have increased because of the laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

7. Online activities that involve cooperation among students have increased because of the laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

8. The quality of interaction between my students increases because of the laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

9. The quality of my students' team products increases because of the laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

Principle 3 : Active Learning

10. The amount of responsibility I have for my teaching increases because I use a laptop.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

11. The amount of responsibility my students have for their learning increases because they use laptops.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

12. The amount of control I have for my teaching increases because I use a laptop.

1 Strongly agree 2 3 4 5 Neutral 6 7 8 9 Strongly disagree

13. The amount of control my students have for their learning increases because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

14. Using a laptop makes teaching fun.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

15. Using a laptop makes teaching more challenging.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

16. Using laptops makes taking class notes easier for my students.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

17. The amount of time my students actively participate in class discussions increases because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

18. My students' participation in online discussions increases because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

19. My students stay involved throughout class because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

20. Using a laptop in class makes learning active.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

21. My students' ability to relate the concepts and skills in my classes to real life increases.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

22. My students' ability to reflect on class discussion and readings increases because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Principle 4 : Feedback

23. I provide more feedback to my students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

24. I provide prompt feedback to my students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

25. The quality of my feedback increases because of my use of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

26. My students get more feedback from each other because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

27. My students get prompt feedback from each other because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

28. The quality of my students' feedback increases because of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

29. Using a laptop improved my ability to provide feedback to my students.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

30. Using laptops improved my students' ability to provide feedback to each other.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Principle 5 : Time on Task

31. I use my computer laptop on a daily basis.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

32. I found myself able to manage my time efficiently because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

33. I use my laptop to plan course activities and assignments.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

34. My students use laptops to complete course assignments.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

35. My laptop helped me plan my course activities and assignments promptly.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

36. Using a laptop has increased the amount of time I spend planning course work.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

37. My ability to plan tasks at times that are convenient for me was increased because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Describe one practice (activity or assignment) in which laptop was utilized and worked particularly well. Why do you think it is effective?

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The Laptop Impact Survey (F)

Principles 6 - 7 (page 3 of 3)

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 6 : High Expectations

38. Using a laptop has increased my expectations of myself.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

39. Using a laptop has increased my expectations of my students.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

40. Using a laptop has increased my expectations of my institution.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

41. My students have higher expectations of me because of the laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

42. I have higher expectations of my students' research efforts because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

43. Using a laptop makes my students feel as if they are taking a more active part in their education.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?

Principle 7 : Diverse Talents and Ways of Learning

44. Using a laptop increases my students' chances to get to know other students who are different from them.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

45. My students were able to make connections between disciplines while doing research because they use laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

46. My students used the laptop to accommodate differences in learning styles.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

General Statements

47. Using a laptop encourages my students to excel at the work they do.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

48. Overall, the quality of my students work increases because of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

49. Using laptops during class is a good idea.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

50. I think the laptop cost is worthwhile.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

51. Using a laptop works well with the way I like to teach.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

52. Using the laptops work well with the way my students like to learn.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

53. I make effective use of the potential of laptop computers.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

54. My students make effective use of the potential of laptop computers.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

55. I believe using a laptop and its related resources has enhanced my teaching.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

56. I believe using a laptop and its related resources has enhanced students' learning.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

57. I think it is easier for my students to do research using their laptop computers.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

58. My students' ability to better understand the ideas taught in class increases because of the laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

In what ways do you feel the Laptop Initiative has been of greatest benefit to your teaching?

List at least three things that students could do to improve the classroom learning and teaching environment using the laptop.

Has the laptop Initiative had an influence on the research you conduct? If yes, how?

Is there any other information you would like to share about your experience of using laptops in teaching and learning

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APPENDIX B THE LAPTOP IMPACT SURVEY – PRESERVICE TEACHERS VERSION

The Laptop Impact Survey (P)

Informed Consent to Participate in Research

IRB# 2004-09-0056

Informed Consent to Participate in Research

The University of Texas at Austin

Dear Preservice Teacher,

Thank you for your interest in this study titled "The Laptop Initiative: A Study of Change in Teaching Practices and Learning Environment in Higher Education from the Perspectives of Faculty and Preservice Teachers." Please read the information below, print a copy of this form for your records, and contact the researcher or his co-chairs about anything you do not understand before deciding whether or not to take part. Please don't hesitate to call or email Abdulaziz Bintaleb, Ph.D. candidate/ Department of Curriculum and Instruction (512.577.AZIZ; aziz01@mail.utexas.edu); Cinthia Salinas (512.232.3539; cssalinas@mail.utexas.edu); or Paul Resta (512.471.4014; resta@mail.utexas.edu).

The Laptop Impact Survey was developed based on Chickering & Gamson's (1987) work that identified seven key instructional practices that have been found to influence teaching and learning environments. According to Chickering & Gamson (1987), good practice in university teaching: (1) encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) encourages active learning; (4) provides prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; and (7) respects diverse talents and ways of learning. You will be asked to answer a series of questions related to your learning experience with the laptop initiative in regard to each practice mentioned above. Based on the pilot study that was conducted in the fall 2004, the survey will take approximately 10-15 minutes to complete. Your participation in this online survey is entirely voluntary. Responses to the Laptop Impact Survey will remain entirely confidential.

The primary benefit of taking the Laptop Impact Survey is the opportunity to reflect systematically on your learning experience in a one-on-one computing environment. Your input will help the College of Education modify and improve the laptop initiative. This study involves minimal risk to you. Taking the Laptop Impact Survey will only cost you the time it takes to complete it. You will not receive compensation for taking the Laptop Impact Survey. You will not be asked any questions of a personal nature. Your participation will not affect your current or future relationship with the University of Texas at Austin. The researcher will not benefit from your participation in this study beyond publishing and disseminating the results of the analysis.

Consent to Participate in the Laptop Impact Survey:
By clicking on the "Next" button:
- you have read the above information about this study's purpose and procedures;
- you have been given the opportunity to contact the researcher or his co-chairs with any questions you have about the study;
- you are 18 years of age or older; and
- you voluntarily agree to have your responses included in this study.

If you do not consent to participate, please stop here and do not click the "Next" button.

Thank you for your time and input!

I agree to participate in this study. Click here –

Next >>

The Laptop Impact Survey (P)

Your Level(s) of certification

- Early Childhood to 4th Grade certification
- Middle Grades certification (4th to 8th grade)
- Secondary certification (8th to 12th grade)
- All-level certification (early childhood to 12th grade)

Your Subject:

- Mathematics
- Science
- Social Studies
- Kinesiology
- Special Education
- Liberal Arts
- English Language Arts
- Languages other than English
- Computer science
- Applied Human Learning
- Reading
- School Organization & Classroom management
- Other (please specify)

Your gender:

- Female
- Male

Your race/ethnicity:

- African American
- Asian
- Hispanic
- Native American
- White
- Other (please specify)

Your age:

- less than 25 years
- 25 to 29 years
- 30 to 34 years
- 35 years and older

For how many semester(s) did you use a laptop computer in your classroom?

- 1
- 2
- 3
- 4 or more

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 1 : Students–Faculty Contact .

1. I communicate in class more with my instructor because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

2. I communicate online (i.e., email) more with my instructor because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

3. I communicate more with my fellow students outside of class time because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

4. Overall, the quality of my communication with my instructor increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

<< Prev **Next >>**

The Laptop Impact Survey (P)

Principles 2-5

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 2 : Cooperation Among Students

5. I do more cooperative work with my fellow students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

6. In-class activities that involve cooperation with my fellow students have increased because of the laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

7. Online activities that involve cooperation with my fellow students have increased because of the laptops.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

8. The quality of my interaction with fellow students increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

9. The quality of my class team products increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Principle 3 : Active Learning

10. The amount of responsibility I have for my own learning increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

11. The amount of control I have for my own learning increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

12. Using a laptop makes learning fun.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

13. Using a laptop makes learning more challenging.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

14. My laptop makes taking class notes easier.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

15. The amount of time I actively participate in class discussions increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

16. My participation in online discussions increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

17. I stay involved throughout class because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

18. Using a laptop in class makes learning active.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

19. My ability to relate the concepts and skills in my classes to real life increases.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

20. My ability to reflect on class discussion and readings increases because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Principle 4 : Feedback

21. I get more feedback from my instructor because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

22. I get prompt feedback from my instructor because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

23. The quality of my instructor's feedback increases because of her/his use of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

24. I get more feedback from my fellow students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

25. I get prompt feedback from my fellow students because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

26. The quality of my fellow students' feedback increases because of laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

27. Using a laptop improved my ability to provide feedback to my instructor.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

28. Using a laptop improved my ability to provide feedback to other fellow students

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Principle 5 : Time on Task

29. I use my computer laptop on a daily basis.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

30. I found myself able to manage my time efficiently because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

31. I use my laptop to complete course assignments.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

32. My laptop helped me complete my assignments promptly.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

33. Using a laptop has increased the amount of time I spend doing course work.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

34. My ability to complete tasks at times that are convenient for me was increased because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Describe one practice (activity or assignment) in which laptop was utilized and worked particularly well. Why do you think it is effective?

<< Prev **Next >>**

The Laptop Impact Survey (P)

Principles 6 - 7 (page 3 of 3)

Based on your experience, how does being in a classroom with laptop computers compare to traditional classrooms related to the following items?

For each item, please select the category that represents your perception with 1 being "strongly agree" and 9 being "strongly disagree".

Principle 6 : High Expectations

35. Using a laptop has increased my expectations of myself.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

36. Using a laptop has increased my expectations of my instructors.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

37. Using a laptop has increased my expectations of my institution.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

38. My instructors have higher expectations of my performance because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

39. My instructors have higher expectations of my research efforts because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

40. Using a laptop makes me feel as if I am taking a more active part in my education.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?

Principle 7 : Diverse Talents and Ways of Learning

41. Using a laptop increases the chance to get to know fellow students who are different from me.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

42. I was able to make connections between disciplines while doing research because I use a laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

43. I used the laptop to accommodate differences in learning styles.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

General Statements

44. Using a laptop encourages me to excel at the work I do.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

45. Overall, the quality of my work increases because of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

46. Using laptops during class is a good idea.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

47. I think the laptop cost is worthwhile.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

48. Using a laptop works well with the way I like to learn.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

49. I make effective use of the potential of laptop computers.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

50. My instructor makes effective use of the potential of laptop computers.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

51. I believe using a laptop and its related resources has enhanced my learning.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

52. I believe using a laptop and its related resources has enhanced my instructor's teaching.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

53. I find it easier to do research using my laptop computer.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

54. My ability to better understand the ideas taught in class increases because of the laptop.

1 Strongly agree	2	3	4	5 Neutral	6	7	8	9 Strongly disagree

In what ways do you feel the Laptop Initiative has been of greatest benefit to your learning?

List at least three things that instructors could do to improve the classroom learning and teaching environment using the laptop.

Is there any other information you would like to share about your experience of using laptops in teaching and learning

<< Prev **Done >>**

APPENDIX C THE PILOT SURVEY VALIDITY QUESTIONS

Validity Questions

- How long it take you to go over the whole survey? ……

- How is the survey? a - too long?
  b - too short
  c - fine

- Is the survey? a - easy to complete
  b - difficult to complete

- If difficult to complete, please explain why?

……
……

- Are the statements/ questions clear? a - yes
  b - no

- Please write the number(s) of statements or questions that are not clear.

……
……

- Are the open ended questions adequate to allow you expand on your responses? If no, please explain why?

……
……

- In general, is the survey appropriate to gather preservice teachers' perceptions regarding the impact of the laptop initiative?

……
……

- Should any of the survey's statements or questions be deleted? If so, which one(s)?

……
……

- Should any other statements/questions be included? If so, please write them.

……
……
……

- Do you have any further suggestion(s)?

……
……
……

Thank you.

APPENDIX D SAMPLE INVITATION EMAIL MESSAGES

aziz01@mail.utexas.edu

From: COE Dean's Office [edadvise@uts.cc.utexas.edu]
Sent: Thursday, November 11, 2004 3:57 PM
To: edadvise@uts.cc.utexas.edu
Subject: The Laptop Impact

Dear Faculty Member,

My name is Aziz Bintaleb and I'm Ph. D. candidate at the Department of Curriculum & Instruction. I'm asking that you take a few moments out of your day to participate in a survey about your perceptions of the impact of the laptop initiative on teaching practices and the learning environment. The survey will only take about 10-15 minutes and your feedback will be of tremendous help as the College of Education improves teacher preparation programs. A similar survey will be sent to your students shortly.

To get started, please click the link below or paste the following text into your internet browser:

http://www.surveymonkey.com/s.asp?u=21998675527

Thanks in advance for your time.

Aziz

From: COE Dean's Office [edadvise@uts.cc.utexas.edu]
Sent: Wednesday, November 10, 2004 9:27 AM
To: edadvise@uts.cc.utexas.edu
Subject: The Laptop Impact
Dear Preservice Teacher,
My name is Aziz Bintaleb and I'm Ph. D. candidate at the Department of Curriculum & Instruction. I'm asking that you take a few moments out of your day to participate in a survey about your perceptions of the impact of the laptop initiative on teaching practices and the learning environment. The survey will only take about 10-15 minutes and your feedback will be of tremendous help as the College of Education improves teacher preparation programs.

To get started, please click the link below or paste the following text into your internet browser:

http://www.surveymonkey.com/s.asp?u=18490664998

Thanks in advance for your time.
Aziz

From: Melissa LeBoeuf Tothero [mtothero@mail.utexas.edu]
Sent: Tuesday, November 16, 2004 11:17 AM
To: 2004 PDS Students
Cc: aziz01@mail.utexas.edu; cssalinas@mail.utexas.edu; Paul Resta; Diane Bryant; Larry_Abraham@teachnet.edb.utexas.edu; Ken Tothero
Subject: The Laptop Impact Survey

Importance: High
Hi!

I would like to strongly you to take ten minutes to participate in "The Laptop Impact Survey." I know how busy all of you are....but we have a very limited window of opportunity to get this very important information from you this semester.

We need your input so we can understand how the Laptop Initiative for Future Educators program has impacted your teaching practices. Your input will enable us to better serve the needs of our students during the semesters to come.

Will you please take time now, before the Thanksgiving break, to help us?

All you have to do to get started is click the link below or paste the following text into your Internet browser:

[http://www.surveymonkey.com/s.asp?u=18490664998
]http://www.surveymonkey.com/s.asp?u=18490664998

Thanks so much for your help with this!

Happy Thanksgiving!
Melissa

--

Melissa LeBoeuf Tothero, MA

Senior Program Coordinator
The University of Texas at Austin
Learning Technology Center

512-232-9598

>Date: Tue, 16 Nov 2004 18:39:49 -0500
>Subject: C&I Fac
Cc: resta@teachnet.edb.utexas.edu
>X-FC-AutoForward-By: "Cinthia Salinas"
<csalinas@teachnet.edb.utexas.edu>
>From: "Larry Abraham" <labraham@teachnet.edb.utexas.edu>
>MIME-Version: 1.0
>
>Dear Colleagues:
>
>I understand that many of you have been invited to participate in a
>research study investigating the impact of the laptop initiative. Of
course, you are
>under no obligation to participate. However it would help the team
>conducting
>this project to know whether or not you plan to participate. So
please
>do respond. This project has the potential to influence our program,
>though only if we receive a representative sample of responses. I am
>providing a copy of the original request below so you will have the
>information necessary to respond.
>
>Thanks!
>
>Larry Abraham, Ed.D.
>Chair, Curriculum & Instruction
>SZB 406, 471-5942

APPENDIX E LETTER OF APPROVAL FROM THE INSTITUTIONAL REVIEW BOARD (IRB)

P.O. Box 7426, Austin, Texas 78713 (512) 471-8871 - FAX (512 471-8873)
North Office Building A Suite 5.200 (Mail code A3200)

Date: **10/18/2004**

PI(s): **Abdulaziz A Bin-Taleb** Department & Mail Code:

Dear: **Abdulaziz A Bin-Taleb**
IRB APPROVAL – IRB Protocol # **2004-09-0056**

Title: **The Laptop Initiative: A Study of Change in Teaching Practices and Learning Environment in Higher Education from the Perspectives of Faculty and Preservice Teachers**

In accordance with Federal Regulations for review of research protocols, the Institutional Review Board has reviewed the DRC's exempt status assessment of the above referenced protocol and found that it meets Exempt Approval under the category designated below for the following period:

Your study has been approved from 10/15/2004 - 10/15/2004

Exempt Category of Approval:

☐ 1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as:
(i) research on regular and special education instructional strategies, or
(ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

☒ 2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; **and**
(ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation

☐ 3. Research involving the use of educational tests, survey or interview procedures, or observing public behavior that is not exempt under number 2 above, if the subjects are public officials or candidates for public office or a federal statute requires that the confidentiality of personally identifiable information will be maintained throughout the research and thereafter.

☐ 4. Research involving the collection or study of existing data, documents, records, pathological or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, either directly or through identifiers linked to the subjects. To qualify for this exemption, the data, documents, records or specimens must be in existence before the project begins.

☐ 5. Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine:
(i) Public benefit or service programs;
(ii) procedures for obtaining benefits or services under those programs;
(iii) possible changes in or alternatives to those programs or procedures; or
(iv) possible changes in methods or levels of payment for benefits or services under those programs.

☐ 6. Taste and food quality evaluation and consumer acceptance studies, involving adults only.

_____ **Please use the attached approved consent forms**

__x__ **You have been granted Waiver of Documentation of Consent**

_____The research presents no more than minimal risk **AND**

_____The research involves procedures that do not require written consent when performed outside of a research setting

or

_____The principal risks are those associated with a breach of confidentiality concerning the subject's participation in the research **AND**

_____The consent document is the only record linking the subject with the research

_____ **You have been gratned Waiver of Informed Consent**

_____The research presents no more than minimal risk to subjects;

_____The waiver will not adversely affect the rights and welfare of subjects;

_____The research could not practicably be carried out without the waiver; and

_____Whenever appropriate, the subjects will be provided with additional pertinent information after they have participated in the study.

RESPONSIBILITIES OF PRINCIPAL INVESTIGATOR FOR ONGOING PROTOCOLS:

(1) Report **immediately** to the IRB any severe adverse reaction or serious problem, whether anticipated or unanticipated.
(2) Report any significant findings that become known in the course of the research that might affect the willingness of subjects to continue to take part.
(3) Insure that only persons formally approved by the DRC enroll subjects.
(4) If relevant to your study, please use **only** a currently approved consent form (remember approval periods are for 12 months or less).
(5) **Protect the confidentiality of all personally identifiable information collected and train your staff and collaborators on policies and procedures for ensuring confidentiality of this information.**
(6) Submit for review and approval by the IRB all modifications to the protocol or consent form(s) prior to the implementation of the change.
(7) Please note that this office will send out a reminder prior to the end of your approval period (typically at the end of the 12 months). At this time we will ask you to give us an update on whether the study is still in progress and/or has had any changes that need to be reviewed for approval.
(8) Notify the IRB and the DRC when the study has been completed and complete the Final Report Form.
(9) Please help us help you by including the above protocol number on all future correspondence relating to this protocol.

Thank you for your help in this matter.

Sincerely,

Clarke Burnham, Ph.D., Chair
Institutional Review Board

cc: DRC

APPENDIX F FACULTY RESPONSES TO THE OPEN-ENDED QUESTIONS

Describe one practice (activity or assignment) in which laptop was utilized and worked particularly well. Why do you think it is effective?

1.	Developing and submitting classroom observation journals into the Blackboard Dropbox. It worked well because: 1. The date/time deadline is stamped on each submission. 2. It is convenient for students to submit work after hours (usually I have a deadline of midnight of a given date.) 3. I'm not overwhelmed with actual papers. 4. I don't run the risk of losing any papers...of course I now run the risk of erasing them!
2.	Students participate in a web based similuation activity. The opportunity for each student to interact with the simulation provides greater opportunities than a whole class share.
3.	Students created i-movies to demonstrate their teaching skills. It was effective because they had to reveiw video of themselves and compare their actions to criteria skills and comment. This focused strong attention on mastery of specific teaching skills.
4.	Creating listening maps and posters for concerts. Adobe Illustrator and other art software make it easier for students to do more impressive work on these assignments.
5.	I use the lap top in all classes, on a daily basis to encourage students to seek reasonable responses to questions in science via the Internet, to design and extend hand-on, minds-on science activities, to reflect on learning, to organize and record notes, and to complete a variety of activities. My use of the lap top is becoming more "seamless" in my classroom, making my instruction more effective (hopefully).
6.	Blackboard multiple choice quiz to test whether students understand a specific concept; using aggregate results I was able to get an immediate sense of what they understood and did not understand. Effective because I got immediate detailed feedback about students' understanding and could tailor my comments.
7.	Students post their responses to readings online the evening before each class.
8.	Reading responses- where students receive feedback from each other as well as the instructor - incorporate the perks of on-line communication (i.e., 24/7 availability, forum for the less vocal student, opportunity to think/revise before posting). However it is very time-intensive for the instructor to read/respond to every student.
9.	Student videotaped their math teaching and brought the dv tapes (or segments they had edited with imovie) to class. In groups, they showed each other their teaching and jointly reflected on their teaching (using a reflection framework I created). This would not be possible without the laptops. Reflecting on your teaching with your peers is an important teacher learning practice. The computer can faciliate that.
10.	Students researched aspects of socially responsible theatre education and related what they learned to classroom practice and the curriculum they were each writing. They presented their research in interactive ways to their classmates and shared Power Point summaries using thier laptops. I believe it was effective because they were able to work with their laptops as they had time, they could collaborate via use of the laptops including planning Power Point presentations that could be blended, downloadng information from the internet, and designing teaching plans and evaluation instruments electronically. They communicated via email or blackboard and could use laptops and the technology in our dept. in class.
11.	Using the internet in class to research a topic and then sharing it in class. It was immediate.

12.	teams of students made "Meet the Interns" newsletters to distribute at their placement sites. These worked well because they looked professional and because they included digital photos of the interns-- it helped the teachers at the school recognize the interns who were placed there.
13.	I have coordinated the out of area pilot project (TTExAS) for apprentice teachers in Dallas and San Antonio this semester. We were able to conduct weekly classes through I Visit. Also, the students were able to participate in Seminars (part of the EDC 350S/650 S) via I Chat on their laptops linked to the Distance Learning Lab. Thanks to Karen French & Ken Tothero's assistance!
14.	My students have done on-line chats in class. I like it because it allows (requires) everyone to participate at the same time, which they can't do ordinarily. It gets the quiet ones to "speak up" and share their ideas that the rest of us wouldn't get to hear otherwise.

Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?

1.	Yes. The undergraduate students have accepted the initiative very well. They use their laptops for all phases of their school work and for personal things, as well (e.g., email). I find myself using it for email to students for class announcements, for example, that would have been difficult without it. No. There are still many features that are still beyond me, especially in the areas of editing digital camera presentations. Perhaps with some practice, this might seem more manageable.
2.	Yes. Students are becoming increasingly comfortable with the laptop and my expectations of the laptop as an integral part of the course. Each class involves some kind of use of the tool.
3.	yes--opportunities for use of internet, email, imovie--has become regular part of course. Unfortunately there is a lot to learn and sometimes the added expectations for being able to create projects becomes overwhelming.
4.	Additional software is needed for my students to use the laptop more effectively. In particular they need music writing software and Adobe Illustrator to use the laptop MORE effectively.
5.	Yes.
6.	Unanticipated consequences, such as students surfing and emailing during class, create serious problems.
7.	the Laptop and online connectivity are tools like so many others and to use it to its fullest potential demands a significant rethinking of teacher and student responsbilities for learning and a re-organization of instruction. I've only begun this process and it is very time and knowledge intenisive, even for a course whose content is well conceived alreadyl.
8.	I find that the students don't really know how to use the computers that they have. They mostly use them for word processing, powerpoint presentations, TeachNet, and email, but don't have a firm grasp on the possibilities for using their laptops for instructional design and for managing things like gradesheets or databases. Before the laptop initiative, the course computer tools for educators at least gave the students an introduction to these possibilities, and each student emerged from that class with an electronic portfolio as well. I feel that those students were better prepared to use technology for lesson planning, instruction, and assessment than the students under the laptop initiative.
9.	Yes

10.	I've mixed feelings... the opportunity to incorporate online material in class is helpful... knowing that all students have a computer/access ups the ante for ongoing communication by both parties. However, laptops also serve as major tools for off-task behavior in class ... shopping, gaming, IM-ing. During off-campus classes, I find students more engaged without the distraction of the WWW.
11.	Without it, I don't know how I'd teach. I employ the computer for just about everything and students having their own computers they are familiar with faciltates the process. I'd them to take a class in advanced ways to use their computers (ie creating webpages, posting to servers...) in their first semester with the computers. That would solve the only problem I have which is I could do a lot more with the things if students had a chance to spend some time learning to use them better.
12.	For the most part, yes, in terms of the resources and support from the College of Education. SInce I work in the Winship Building, we don't have the same support services. We need a bit more low cost hardware (portable routers, projectors, cables) so we can use the laptops throughout our building. We have limited access in some classrooms.
13.	I really didn't have any expectations at the outset-- the decision was made on high and we had no choice but to go along. I have found it to be a mixed bag-- some benefits, some problems.
14.	Yes and no. I am unhappy with the way students use their laptops in class. Many try to surf the net or do email. But I think the laptops can be a great tool for working with students.
15.	So far it has been a very helpful system.
16.	I had few expectations for the laptop, so I'd say yes! I have gotten used to it and rely on it to share information with my students through a projector in class. We often go online, which increases the amount of information I can share with my students in class. They also can share group work with each other very easily. I often have them email their group results to everyone else in the class.
17.	I think that students using computers is critical, but I do not think that laptops in the classroom are necessary. With undergrads, graduate students, and even faculty, I have seen many hours spent searching the internet and checking/writing email when other activities should be happening.

In what ways do you feel the Laptop Initiative has been of greatest benefit to your teaching?

1.	1. Decreasing the amount of paper handouts. I now post everything, including the course syllabus, on Blackboard. 2. Sending out last-minute or emergency announcements. 3. Accessing an infinite number of websites on every imaginable topic for use in class. 4. Although this is related to the Inititiave only peripherally, I find myself using technology more than ever. In a couple of classes, I give my tests electronically in one of the labs using Blackboard. I probably wouldn't have done this to the extent that I have if we had not had the Initiative. It has made me more comfortable with some aspects of technology.
2.	Pushing me to explore the possibilities of technology in the teaching of the social studies.
3.	Creation of I-movie assignments
4.	It has forced student to acquire computer skills they will use in teaching.
5.	Enriched my teaching by bringing tremendous resources into the classroom.

6.	Makes it more possible to publish student writing and get them doing projects for real audiences.
7.	I think this is the wrong question. The question is how benefits the other. To incorporate laptops without a significant rethinking has been frustrating to me. I use laptops extensively and fairly innovatively, yet I feel that, to simply adapt the laptop to my old teaching style has not been effective. One example I'm sure you'll hear over and over is dealing with students who are surfing (checking email, browsing the web, etc.) during class in ways that take them off task. Since it is virtually impossible to stop this (I've tried) I beleive the solution has to do with a significant reconfiguration of the learning experience and the kinds of responsibilities I expect students to take on. One example: use of powerpoint is a natural result of laptop integration into intruction. But I found to my chagrin that I was taking on the bulk of the responsibility for engaging with the content (in writing the powerpoints) and students -- although it has always been an explicit goal of my teaching for students to be actively engaged -- were more passive. I also find I have been talking less to students in order to manage the technology during instruction. Althought there is an inevitable learning curve involved with introducing technology, I believe as I've said significant rethinking is required.
8.	I don't really think that it has been a great benefit to my teaching. I already incorporated the use of technology into my classes prior to having a laptop. It does make planning a little more convenient.
9.	communication
10.	Students have greater access to information and we all are better able to communicate ideas to each other in and out of class.
11.	My teaching materials are better now. Also, using the laptop allows me to plan my course and then make all of the materials available to the adjuncts and AIs who teach other sections of the course.
12.	I has been crucial to the effectiveness of the out of area apprentice teaching pilot program.
13.	I think the LI has made me learn about computer technology that I wouldn't have done on my own. It has required me to think about how to use technology in my teaching, which is something I'm supposed to be teaching my students. I also think it's made teaching more challenging, which I find interesting and motivating. I have been teaching a particular PDS class for 10 years, and it's never the same two times in a row. The laptops have helped me keep things fresh and interesting for me, and I think that keeps the students more interested, too.

List at least three things that students could do to improve the classroom learning and teaching environment using the laptop.

1.	1. Access appropriate clip art to create attractive class materials. 2. For bilingual students, access and use the excellent Spanish language resources available world wide to improve their command of the language. 3. Same as #2, but for the purpose of identifying Spanish language materials for their eventual elementary classrooms. 4. Establish email contacts with Spanish speakers around the world.
2.	1. Expanded use of resources. What was not previously easily accessible to us is now readily available. 2. New approaches to old ways of teaching the social studies. The use of primary sources/document based questions becomes an expectation rather than a burden. 3. Instant answers/debates about information/narratives that define our subject matter. Suddenly we can question and fill the room with information that helps to disrupt the myths of history.

3.	1. center their computer use on the laptop rather than keeping multiple systems going 2. keep up with blackboard postings
4.	Only use laptops for relevant work in class, rather than using it to distract themselves. Truly engage with others' ideas in online discussions. Be willing to use composition to think and learn rather than just present finished products.
5.	stop going online for non-course related activities during instructional time; is this a chimera of a goal though?
6.	I don't know if the students themselves can do anything. I think that their needs to be more institutional instruction and support for the students. I find it near impossible to provide technology instruction along with my regular curricula for my classes, as I feel the subject matter of the courses is more important and requires more attention. I am sure that many faculty members feel the same way. I can provide support for my students when they complete activities or assignments on their laptop as I have a tech background, but I just don't have the time to provide direct instruction and think that is what the students need. I know this does not really answer your question posed here, but I think that instruction would improve both the learning and teaching environments using the laptop.
7.	1. Use it for specified tasks not recreation in class. I don't like to have the UT students use their laptops when wireless is available in a room b/c of past negative experiences w/students who blatantly were off-task during class. 2. Use the machine as a teaching tool w/your students, especially those who struggle w/reading and writing ... (and yes, that is addressed explicitly in classes). 3. Access online professional, refereed journals to inform your practice as an educator.
8.	1. Make the laptops affordable to all students or better advertise and support a loaner program for low income students. 2. Have adequate memory loaded in machines. 3. Staff the help desk over breaks or at least list a contact person or phone number for reaching someone during breaks. 4.Support the hardware needs of faculty and studen teach EDC classes in other colleges.
9.	Stop surfing the net during class Don't assume that if something looks flashy it will meet the professors' expectations for substanance and depth. Learn how to use the required applications on your own time.
10.	Stop using the laptop to check email and surf the net Use the laptop as a portable device--not plugging it in during class--this drives me nuts
11.	Notetaking Research Finding resources to enhance their teaching
12.	1. take notes during class 2. send each other information they have gained from class or have gathered in an internet search 3. communicate or clarify ideas between class sessions

Has the laptop Initiative had an influence on the research you conduct? If yes, how?

1.	Concerning the laptop initiative, itself -- It has allowed me to observe and take notes efficiently during classroom observations here and in Monterrey, Mexico. For other aspects, however, I use my regular office computer.
2.	NO
3.	na
4.	no.

5.	YEs, made it very convenient and easy to access needed information.
6.	No
7.	no and I don't anticipate that it will
8.	No.
9.	no
10.	I am able to be on leave or travel to do on-site research using my laptop while staying in communication with colleagues and students via email.
11.	It's easier to do field-based research with a laptop that with a paper and pencil
12.	Yes, I'm able to take field notes in classrooms
13.	not yet; just the writing so far
14.	Yes, because I too am doing a research study on the effects of the LI on faculty and students.

Is there any other information you would like to share about your experience of using laptops in teaching and learning

1.	I find it bothersome to have to tell students to close their computers during class. We all know that at times they are instant messaging each other under the guise of taking notes. How do I do this in an efficient and effective manner?
2.	The laptop initiative remains ahead of its time. Students are technologically savy but not regarding teaching with the tool. Faculty are not so savy and are hesitant to abandon more traditional approaches. The initiative pushes the envelop in signficant ways...but it takes time to learn and understand how to use the technologies. It takes a willingness to change.
3.	Potential is enormous--time students spend on assignments can get out of hand because of the bells and whistles. Sometimes it is hard to focus on the content because of the attraction of the bells and whistles.
4.	Students need to be able to acquire additional software that is appropriate for their area at affordable prices. My students use Finale, Adobe Illustrator, and Flash to complete class assignments. Currently, the cost of these programs makes them prohibitively expensive, especially after having purchased the laptop. Making these programs available to Fine Arts students at a reduced cost would be extremely helpful.
5.	when students have their laptops open in front of them during class (and many if not most of my students because I do not limit computer time because so much of what we do is web-based) the open tops seem to function as a small barrier between the student and others. this seems to put a damper on human interaction.
6.	I find the laptops a distraction in the classroom at times as the students do not use them only for classroom activities, such as taking notes, but often use them to check their email, surf the web, etc. during lectures and other classroom activities.
7.	n/a
8.	Mike Bell and Melissa Tothero have been most helpful to me and my students as has Chris in the Help area. I feel I need refresher classes each year or semester. Often they are scheduled at times I am not available. A survey of best times for faculty to attend and maybe more frequent short brush up sessions might be useful.

9.	This was a very frustrating survey-- there were so many design flaws I don't know how the results will be of any use. The structure of the likert scale often prevented me from representing my actual opinion. Often I didn't feel neutral about an issue but "neutral" was the only way I could capture the fact that I had mixed feelings. There were other times when I had to use "neutral" to indicate that I had no information to offer because the question wasn't relevant to my class. Also, the questions focused on very superficial aspects of the laptop initiative-- did they do more, was it easier, etc. Just because a student does research more easily doesn't mean that the quality of the research is higher than it would have been. I have seen an increase in mediocre work as a result of students believing that downloading some information off the internet and making it look fancy is all they need to do. Important levels of meaning are lost with this instrument. I am happy to support the Laptop Initiative but this survey was a waste of time.
10.	the ed. technology support personnel in the IDEA lab have been terrific.
11.	My negative answers about laptops have to do with students playing on them during class. It's a huge problem. When I answered the questions about their communication levels going up, it's because the all IM each other, sometimes during class. They have instant access to a wealth of information, but they don't always know when it's a good time to access it and when it's not.
12.	I think that my answers for all of your questions would have been different if the word "computer" was substituted for "laptop." I think computer use is vital, but I don't think that students necessarily need to have them in class. The greatest use that I see is that students can work on research and/or assignments between classes and not have to go home or to the library to work on a desktop computer. Again, let me emphasize the amount of time that I see wasted in class when laptops are present.

APPENDIX G PRESERVICE TEACHERS RESPONSES TO THE OPEN-ENDED QUESTIONS

Describe one practice (activity or assignment) in which laptop was utilized and worked particularly well. Why do you think it is effective?

1.	in class visiting websites.
2.	Using teachnet over the course of the semester.
3.	We gave power point presentations in one of our classes which included an imovie, music, and pictures...all of which were accessible through the use of our laptops.
4.	final group project for ALD325. It worked well because I had to complete a powerpoint presentation with a group member, we were able to exchange ideas and collaborate together via our Ibooks.
5.	Going to online sites together as a class...one instance going to the TExEs website to look at practice questions for the certification test.
6.	Creating a website, it was effective because my partner and I could meet in a comfortable coffee house and use free wireless to complete the assignment.
7.	preparing/displaying documents/resources to supplement lessons. having a laptop gives the instructor access to a wealth of information, all readily at hand, through the internet, CDs, etc.
8.	I learned to use powerpoint by doing a powerpoint presentation as a mock teacher conference. It was very time consuming work but I learned powerpoint even though I could have done it in a quarter of the time with less frustration without having to do the project. The actual content of the project was simple and a total waste of everyone's time when we had many other important things to do.
9.	I love my laptop! It is really fantastic, but I don't think of it as a super duper communication tool. For me it makes work more convenient and keeps me more organized. It is a must.
10.	Power Point presentations using digital pictures and videos worked well with the laptops because the laptops had every program needed to include different types of technology for the presentation.
11.	When I have to do class videos is the only time I really use the laptop. I use it probably 7 times a semester. I spent $1000 of my own money and I never use it.
12.	I had to give a power point presentation to my class. I was able to use my laptop to connect it to the projector. However, I could have just as easily put the slide show on a cd and played it through the computer.
13.	Each class member found primary documents online and used them to construct a set sources for a DBQ. It was particularly useful because it gave us a chance to be creative and to learn a few sources or approaches to finding sources that we might not have come up with on our own.
14.	powerpoint lessons for my student teaching
15.	Using iMovie was a great experience because it is a creative process and it can be used in any class room.
16.	Reflecting on class readings by posting them in our online discussion forums for the Education department.

17.	Power Point Mock Parent Conference: I had all the movie clips, pictures, and notes that I needed to include in my power point conference. I could work on it anytime, since I could take my laptop with me. At the same time, I could go online, and ask for help, or look at sample power points.
18.	Making imovies for social studies methods class.
19.	completing iMovies; it was effective because i was able to work on the imovie anywhere i needed to and because i could only use a mac to make it.
20.	We did an online discussion board in class and then got to look at everyone's comments and discuss them. It was effective because people who do not normally speak up in class had their opinions heard, also.
21.	I have never thought that there was an an activity that I've done in class that absolutey 100% necessitated the use of a laptop.
22.	Social Studies web page
23.	Checking assignments b/f class and knowing what to expect in class. I was better prepared.
24.	Every activity/assignment that I do can be done on any desktop computer! Using a laptop did not affect the quality of my work.
25.	In making movies of my lessons. It is an easy transfer that is not possible otherwise.
26.	Having a laptop with a wireless card makes any sort of internet research convenient almost anywhere on campus. However, I could easily have outfitted my Dell laptop for wireless internet, rather than buying a new Apple laptop. On a daily basis, I surf the web looking for articles related to my classes and to research projects I'm working on. The other day I used my laptop to browse the internet for information about writers of fictional memoir for a lesson I was preparing to teach. I already had Sandra Cisneros in mind, but I wanted to know more about some other authors like Sherman Alexie and Gary Soto, whose work I haven't had a chance to read yet. Basically, between having the laptop and wireless internet access on campus, I spend more time on the internet than I might otherwise.
27.	In UTL 303 we are asked to compose and online portfolie, without my laptop i wouldn't be able to work on the assigment in class, but the laptop is required for the class so I wouldn't be in the class with out it.
28.	It simply is more convenient. I can exchange notes with another student who has a laptop in two seconds via e-mail, I never have to wait in line for a computer at the library, and I work on an assignment even on the bus.
29.	na
30.	In any class that requires using a quick internet search to answer a question, the laptops help if there is a working wireless internet connection.
31.	I use my laptop for everything- from taking notes in class to making presentations for assignments. I even use it on the field with my kids. It works well for me because it is portable and easy to use.
32.	We had an online discussion during one class. We answered questions and then responded to other student's responses online. It was a great way to talk about personal issues without the anxiety of a large formal group discussion.
33.	Science interactive lesson plan project that involved an interactive website: Each student created a lesson plan that was derived from an interactive website that was appropriate for

	elementary aged students. We presented each of them in class and every person was able to visit the websites and explore new ideas while the presentation occurred. We were able to ask questions and visit new exciting resources to use in science with our own students.
34.	I think laptops are unnessissary. I could do all these assignments with my old desk top. I don't see why i was made to buy a laptop.
35.	None
36.	N/A
37.	I used my laptop for my imovie because it has the software to make a movie
38.	Dr. Smith in Behavior Management had us use them to take notes in our schools. It was nice because you didn't have to type the notes back into the computer later.
39.	lesson that involved allowing students to listen to audio and watched media clips
40.	We had to do an internet scavenger hunt in a cooperative group. My group won because we all had laptops. We were all on AIM and could send eachother links to answers, delegate questions and it was easier to cut and paste rather than tell eachother what we found and rewrite the answers.
41.	Making lesson plans. I was able to easily share the lesson plan with my teaching partners. I was also able to clearly illustrate everything I needed to with computer programs.
42.	We use our laptops to post reflections, projects, and other questions and announcements on Teachnet. This is effective because it is an easy way for students and teachers to communicate amongst each other without flooding our regular email boxes.
43.	In class, we used the laptops to interact with educational software. This way, we students were able to not only actively experience and relate to the topics, but we also were able to work together to discover new meanings.
44.	The general convenience of being able to access my documents and work just about anytime, anywhere, is what I find most useful about having a laptop.
45.	Webpage creation-all needed programs available Writing essays - can be e-mailed instead of printed out
46.	I am able to work on lesson plans and write journal entries while I'm at my school.
47.	It worked well when I had to make an i-Movie because it has some cool graphics and stuff on it, but other than that any computer would work.
48.	Laptop was used during class to have all students review information together. Everyone was at the same website at the same time, reading the same information.
49.	Making Imovies is the ONLY time I have had to use my labtop vs. a PC.
50.	building an online portfolio because we needed the computers in the classroom with us at all times
51.	worked in a group in class and prepared a powerpoint presentation and presented in class.
52.	Election Portfolio Imovie
53.	I had a class project where an assigned group worked together to make a video. Our laptops made the project go smoothly and made it easy to cooperatively work together. Also, it produced a high quality product.

54.	I used the computer programs on my lap top for my math classes.
55.	I have 3 classes I take notes for exclusively on my laptop. I simply type up the notes in Word, then I add to them each class and save them as a unit. When it's time to review for a test, I print them out and review. It's effective because I type faster than I write, so I'm able to get more of the lecture points into my notes, and I can organize them in a way that's most effective for me. (Outline style)
56.	I used it to make an I-Movie in which was a lot easier to do with the I-Movie program on the I-Book.
57.	Online discussions with fellow classmates and teacher... Allows everyone to speak and express their opinions without feeling like they will be shut down or not heard.
58.	It enables me to work on assignments anywhere.
59.	I have taken my laptop into class and wokred on assingments while another teacher was giving instruction. It worked well beacuse I could get assingments done but it was bad beacue it distraced me from my task of listening to my instructor.
60.	Making an imovie. I used the laptop for the project. I had never known how to make one and therefore I learned how.
61.	It distracts from class, people sit and check mail instead of listening in class
62.	Editing footage of internship (within iMovie) to reflect on my own teaching practices.
63.	We created a website in class. Each student needs a computer to do this, but I feel that for all of the assignments we have had, I could have done them, with the same programs, all on a pc and not a mac.
64.	During a powerpoint presentation, my laptop was really helpful.
65.	powerpoint for showing pictures online of the sahara desert- saved transparencies, only used the projector, just copy and pasted the pictures and typed in some information that was pertinent, and I was done for the presentationt o stimulate the kids' minds - visually
66.	When I am riding the bus, I can do work on my laptop and have at least half my assignment complete. I think it is effective becuase I can use it whenever I need to.
67.	We have not been required to use our lap tops in any of my classes (I am currently in Methods, EDC 370); therefore, my lap tops has not been neccessary for the completion of my teaching certificate.
68.	research
69.	- organizing my schedule with iCal. - sending emails promptly with the mail program. - ability to search for background information on a discussion during class
70.	creating powerpoint presentations as a group... boring activity overused in all education classes but definitely facilitated by laptops
71.	In an Educational Psychology class, we filmed ourselves teaching, then we used iMovie to make a short film about the way we applied what we'd learned in class. While this was fun and interesting, I could have done it just as easily without my laptop. But, the laptop was convenient because I could take it anywhere to work on it, and it already had all the software I needed.
72.	We respond online to our daily readings. This was an easy and efficient way to communicate with our peers and instructors.

73.	None of my classes so far have required the use of my laptop.
74.	Researching and writing papers was greatly facilitated as I could do either at any time with the laptop. Even if I have to leave town for some reason I can still get as much work done as I would at home.
75.	I like my laptop but I don't use it much in class and feel it is a waste of money.
76.	I have never done an activity in or out of class that could not have been with a regular computer.
77.	findind research on the internet, then creating a power point presentation
78.	I like taking notes on my laptop because I can always go back and read the notes and make changes accordingly. It is effective in class because it helps me pay attention and I don;t have to worry about readng my handwriting if I am writing too fast.
79.	The laptop is most effective in that it provides more opportunities to use the internet in a variety of settings. I have been able to carry my computer and get online at home, in the library, at UT, at my internship, etc.
80.	It works well for any assignment that you would use a computer for. But it does not work any better than the computer I had before. I do not appreciate having to buy something that is $1000 that is not necessary.
81.	In my math class we use it to answer question on blackboard, but overall I feel they are more of a distraction then anything else. Half the time I find myself surfing the internet and not paying attention to my teacher because we have to bring our computers to class and since I had to buy this computer I am going to use.
82.	I can't think of on in particular that the laptop helped. It is somewhat convenient to have internet access throughout campus without having to go to the UGL or another library and wait for a computer to be available, but having a laptop in class makes it more likely that I will not pay attention to lecture - games, the internet, email etc too tempting.
83.	When an instructor is on a website of some sort it helps to be able to be on the same page at the same time.
84.	I don't feel it's very productive to require laptops, assignments can be done without them
85.	I have used the powerpoint on the ibooks for class lessons. Using the projector helps for the class to follow and visibly see.

Is the Laptop Initiative meeting your expectations? If yes, how? If no, why not?

1.	no. no point really.
2.	Yes, because I am able to interact more with my classmates and teachers.
3.	Yes, because it is giving us the opportunity to experiment with technology that we might not have known about prior to this initiative. I think that it will definately prove to be useful in our future classrooms because we will be experts on all of the programs on our computer, thus increasing the practicality of our classrooms.
4.	yes and no. I love being able to tote around my light-weight laptop. BUT - i spent over 2,000 on my ibook and it has already crashed on me twice! if C.O.E. wants to mandate that everyone purchase a laptop like the Ibook, they should try and make it last longer than 2 years.

5.	I enjoy having a labtop and being able to take it to class yet I dont think it has made my learning experience more meaningful. first of all, my screen has been cracked for sometime and that has made it hard to actively participate with my labtop and secondly I enjoy taking notes by hand. labtops can be distracting in class as weel...i look around me and i observe people checking their email, doing their audit...
6.	It's convenient to have a laptop--but I do not feel like it is so encorporated in the curriculum that it should be required to own one--particularly a Macintosh.
7.	I'm sad that my labtop is already out of date because they only recently began selling G4s.
8.	The laptop has been a complete waste of time. The PDS teachers add useless projects on top of all the other work we already would have had anyway so we know how to use the laptops. All projects I have done were time consuming and could have been taught in a much more efficient manner without having to spend the large amount of time on the laptop. There are very few people that use the laptops in my classes except to entertain themselves when the teacher is lecturing and to do the projects occasionally. It seems that the education school is just trying to seem up to date at the expense of the students. ifeel that valuable time is wasted in these classes working with these computers. The fact that we are required to purchase the laptop when there are plenty computer labs available to use already is rediculous. I now feel that the money I spent to learn in class is going to waste just so the college of education can say they have the laptop program.
9.	Yes, because this laptop has many neat programs to offer education majors.
10.	yes, I learned a lot
11.	No. A laptop does not make the learning more active, the teacher does that through the activities. My expectations of myself do not change becasue I have some piece of equipment. I always have high standards for any piece of work I do. The things I do on a laptop I can also do on a desktop.
12.	Yes, because I expected it to be primarily useless and unnecessary. While I use the laptop daily it is almost never in conjunction with my coursework as I do that on my desktop PC at home, which I am more familiar with. In terms of communication, the laptop has had almost no bearing on my experience in the courses I've taken. I can count on one finger the number of times that I used it to communicate with my instructor.
13.	No, we do not use the laptops very much and it is disappointing that we are forced to spend the money on a specific computer when we could have completed the tasks on other brands of laptops. I think it is a good idea to prepare students with knowledge of technological integration in the class room, but buying a specific laptop to use for only a few projects is too much to ask.
14.	Somewhat. Realistically, there is alot of side activity in the classroom that comes with having a laptop (e-mailing, chatting, online shopping). I feel that the quality of discussion decresases, bevause at times the laptop is a distraction. I also feel that we are assigned projects whose only purpose is to use the computer, and that sometimes the computer is used in unnecessary ways. For instance, I took a test on the computer and then burned it to turn in on a CD (instead of just taking a test on paper). We also used livetext, (because we have laptops) to post all of our notes, and lesson plans online. In my opinion this was unnecessary since, we could already share everything on our teachnet account, which can be reached using any computer.
15.	I was a little miffed to learn that the Apple iBook or Powerbook was required for our program; no other laptop would suffice. I *b*really*/b* did not appreciated having to buy Mac.

16.	I don't think I should have had to spend over $1000 on a computer to do the same work I could have done on my home PC. There are some applications that are only available on Apple, and I understand that some assignments require them. The assignments, though, don't seem as though they would be beneficial to teachers. Not one of the teachers I've come into contact with uses any of these applications to teach, such as imovie and iphoto.
17.	No; it seems that having a lap top is more of an inconvenience than a convenience due to the fact that you have to carry it aroud, plug it in, buy a case/accessories and the fact that you are FORCED to buy one in order to take part in the PDS. I feel that I was and still am capable of doing many things on the regular PC that I have. The only programs that is missing is imovie.
18.	No, I feel like I could have accomplished everything that I have accomplished with my laptop now with my old desktop. Also, the laptops in class were more of a distraction than a learning tool.
19.	No, because I don't feel that all my instructors use it to its full capacity. We are required to bring them to class, but rarely use them in every class.
20.	yes, I learned a lot about technology and using it in the classroom. It was just too expensive to buy....I think something should be done about that.
21.	In the classes I took in my PDS, very little work was assigned, in so far as strictly needing the laptop. I used my other computer as well to do work for all my EDC classes. The laptop initiative served me best in getting me up to speed and prepared to enter the very computer-friendly classrooms of the 21st century.
22.	No because I see no reason why all of us needed to buy specifically an Apple laptop computer. None of my classes require an Apple laptop.
23.	Yes, but teachers who make a bigger fuss about students doing stuff online seem to be wasting their breath. I see better understanding of the material because of use while in class. The cost students have to pay should be rewarded by having no teachers force students to close them during class.
24.	I had no expectations for the laptop initiative beyond knowing I'd have to shell out $1500 to replace my perfectly functional Dell Inspiron 8100 with a Mac. Using a laptop has no benefits over a desktop computer except the convenience of being able to work wherever one chooses to plop oneself down. Even convenience is questionable since I now have an extra 5-lb weight in my bag everyday, which displaces a couple of the books I might otherwise carry to campus.
25.	No, the laptop doesn't do any of these things. If the questions were presented differently I would have agreed but any computer can do these things, not just a laptop. I really like my laptop but i just don't see why it is a requirement when in theory any computer or laptop could do these things.
26.	I actually expected it to be a burden; however, my note taking has improved 100%, my time management has improved, and my performance even with the smallest task has improved.
27.	i did not know what to expect but i do feel that the laptops were not really needed. It puts some students in finacial strain and it is not worth it because the laptops are used in class but not to the extent to where if one did not have one they would not make it.
28.	Yes and no. I do a lot of cool things with my laptop-from making presentations, to making movies and web pages. I love my Mac, but wonder if it had to be a Mac only. This might have been cool if we were allowed to use PCs as well.

29.	As with all technology, there are certain headaches that come along with using the laptops when they simply don't work or are expensive to repair. It is helpful to have one place to go in order to review my notes and I have easy access to the internet via the wireless connection. It does add to the technological courseload, but many of these assignments are replacing less technical assignments.
30.	No - it was a huge waste of money. I did not need a laptop in order to meet these expectations. Any computer would have allowed me to meet these expectations. Instead, I wasted $1,000 on a computer that I do not want. I already had a new computer but felt obligated to buy an Apple. Instead, students spend their time online instead of paying attention to class. Laptops allow students to multi task instead of giving their undivided attention to the professor and the class. In addition to a laptop, professors expect students to have access to the internet. I have had professors email/teachnet students the day of class to ask us to bring certain materials to class. Students are now expected to stay connected 24 hours a day - and this is not possible. Its unfair for professors to expect me to constanly check teachnet for their updates. These things should be done in the classroom and not expected to be done outside of the classroom. I do not believe in the laptop initiative. It forces student to spend money they may not necessarily have. It has forced me to stay online/connected much more than I would have normally been. It has forced me to do projects that really did not have any academic value.
31.	Yes, because I have much more involvement in my cohort and with my instructors and information is shared much more easily.
32.	No it has not. I think a better idea would be to encourage all incoming studentsn to buy a laptop instead of making them buy it when they already have a desk top or a laptop that's not from apple.
33.	Im not sure. There are things I like and then things I dont.
34.	No, because of the requirement of it being a Mac instead of using PCs. I have a PC laptop and see no real revelent reason for the College to 'require' a Mac when PCs could do the same and with technology allowing for virtual machines and other methods to run Mac programs on PCs
35.	I think that anything that I have used my laptop for I could use my desktop computer for. I have not had internet connections at the past two schools I have been in, so I have not needed a laptop for my classes.
36.	I don't like that we HAD to buy the laptops but I am glad that I was exposed to Apple...I love it.
37.	Yes, it's nice to have it, especially in the schools. But I don't think that it has radically changed the way classes at the university are held. In fact, if anything, people waste time during class IMing each other and shopping on eBay. I have a computer at home and there's plenty to use in every building on campus, so I could make do without it. Instructors and classmates email the same amount as they used to. And the quality of your work does not improve just because you have your own piece of plastic in front of you. Webspace pretty much erases the concept of needing a physical object to hold your files.
38.	I can't really say yes, since I was supposed to receive funding for a laptop in my last financial aid package upon entering UTL 303 but I never received it...
39.	it's not really doing anything,,,it just makes it more convenient
40.	I don't really think it is utilized in the best possible manner. Some professors had more initiative to use the laptop than others who only met the minimum requirements. I embraced the initiative because I have grown up with computers. I did enjoy the

	experiences as the programs and the equipment allowed me to do things that I ordinarily would not use, such as iMovie. But I don't think a lot of my peers benefitted because I don't think they were pushed enough to really take advantage of the new programs.
41.	NO..Labtops should not be reqiured for us to buy. We should be able to use our deskptops at home or in library's on campus. Not everyone has the money to do all of this!
42.	I think the laptops give immense potential, but I do not feel it is being used to its fullest and could easily be improved upon.
43.	I thought I would use my laptop more in class, but I haven't really found that to be the case yet.
44.	Even though I enjoy having a laptop, requiring education majors to purchase a specific laptop is ridiculous.
45.	Yes, assignments are done much easier and faster. Very convenient
46.	NO!! Requiring students to purchase a laptop is completely ridiculous! The laptop is not necessary to completing work or developing a better understanding of instruction. I feel like because we are college students the university expects us to have an endless amount of cash, but this is not the case. I just don't see how having a laptop has helped me to learn more. Also, when we do bring laptops to class we are usually told to close them and put them away; our professors try to deter us from using them. What a waste of money!! Our laptops don't do anything necessary that any other computer couldn't do.
47.	No, most of the time I feel like the teachers are finding more assignments just to connect them to the laptops
48.	It is the same as any other computer and I don't see how it makes a difference what kind of computer I have or whether or not it is a laptop or regular computer.
49.	NO because we do not have to use our laptops unless we are making imovies.
50.	No, I wasn't able to yse a Laptop that often because someone who had used the computer before me had sent a virus, so my wireless account was disabled.
51.	no...i like it, but not by any educational means. The Laptop is very convenient but very distracting during class. It is nice to take notes on, but if it is possible to get online, I cannot stay focused on the class.
52.	Yes, because the assignments and projects that teachers want us to do, we have to use our APPLE LAPTOPS
53.	I like having it. I haven't started my PDS so I'm not so sure how usful it is yet. Its a great laptop to carry around to my classes now.
54.	At this point, I'm not in the PDS, so I don't know if I'm part of the Laptop Initiative...I'll have to see later on. In general, I think I'm more successful in my classes because I take good notes, better than I'd take writing them out. The problem I have is that aside from lugging a heavy peice of technology around for 5 hours on my back, I get a lot of great notes, but I'm so focused on the words that I'm not hearing the complete message. It distracts me from the lecture, so I think in that respect is does more harm than good. Perhaps more teachers could post their notes to Bb or wherever so the students are free to follow along with the lecture, but really HEAR what's being said. That would help me.
55.	Yes, in many ways.
56.	Yes... I use it across my classes and into my teaching practicum almost every single day!

57.	yes. it enables me to complete my work anywhere.
58.	I did not realy have any expectations about the initiative.
59.	No. I do not think every student needed to buy an apple computer. Every classroom I have taught in has PC's and I have almost been put at a disadvantage because I have learned how to do all of the processing systems on an apple, I find myself forgetting how to use a PC. All of these questions were silly. A laptop in class has not increased anything. Most of my professors have either been afraid to use our laptops, or have overused them with "stupid" laptop assignments just so we will express the idea that we have used them when we complete course evaluation surveys. The laptop has not helped me be a better student. Having a computer, yes, makes all of those questions correct, but no offense...it's not your laptop that helps. If anything it takes my attention away from my instructors because I would rather be checking my email. The only good thing about our laptops was the fact that we could do in class research. This helped with certain activities that would otherwise have to be inconveniently in a computer lab. That is the one benefit!
60.	No, I hate Mac's. They are over priced. Why cant I use a pc based laptop? This is so infuriating. Especially since I can do everything on a pc that a mac can do. Power point is a pc program. I movie can be susbstituted for. I just dont get it. I do all of these things at home on a pc or in a computer lab. Laptops take away from the class room.
61.	Absolutely not. My instructors do not make use of the laptops within the parameters of our class, and some even refuse to let us use them during class. On the rare occasions that they ARE utilized, the activities are obviously designed only to make use of the laptops, rather than to increase the quality of our learning.
62.	No, I thought that we would use mac-specific programs, that's why I bought it. We have not done anything that I could not have done with a dell. It was a waste.
63.	Yes, however, I disagree with having a mandatory brand of laptop. I feel that any laptop, meeting certain qualifications, would have been just as useful. I do not think that we should be forced to buy one certain brand of computer, especially when it is a brand that is not very prevalent in education.
64.	Yes it is because it is convenient being able to access the internet, and complete assignments online.
65.	yes- it's portable, usable, and powerful to do research, present for educational projects in class and in meetings, in every way.
66.	Yes, because I am able to save my work and carry it around with me.
67.	No, because it has not been required in any of my education/UTeach classes.
68.	yes, makes everything easier
69.	No, because it makes it much easier to get distracted in class. Also, many of the professors do not know how or choose not to incorporate them into their classes.
70.	yes, but we don't use it in UTL303 as much as people told us we would.
71.	No, I had another laptop that just wasn't a Mac, and I could have just as easily used my other laptop.
72.	NO. Most classes use laptops only superficially (to view powerpoints which could easily be shown on a projector, to post messages on discussion boards in lieu of in class discussions, etc) and most students actually are off task during class because they are checking email or on the internet instead of listening to instructors. It's a distraction under the guise of an

	educational tool. Not necessary on a daily basis at all, definitely not something that ever needed to be required given its current use.
73.	I have really enjoyed my laptop, but I have lots of problems with the College of Education REQUIRING us to have one. There was no assignment in any of the PDS that could not have been done without the laptop. Entering college, I bought a very nice desktop computer. When I found out a year and a half later that I had to buy ANOTHER computer, I was really upset. I felt like I'd just wasted over 1000 dollars on a computer. I felt that there was far too short notice; people need to know coming into college that they need not get a computer when they're going to be required to get a new one soon anyway. In addtion, I think the professors, though they tried, did a poor job of incorporating them into our courses. I feel that we never had a task that could not have been done without a laptop. I really never got a REASON from any of the professors (including my coordinators) as to why we were made to buy the laptops. Finally, I paid A LOT less attention in class when I had my laptop. I surfed the Internet, I played games, and I did anything except focus on the task at hand.
74.	I haven't really used it in any of my education classes. I am expecting to use it more when I enter the PDS this spring.
75.	Yes, it is what I thought it would be used for.
76.	Yes because it has helped or forced me to master technology that I may not have otherwise.
77.	No, because I have never really used the laptop in class for anything. I do think that it is nice that I could get a very nice Apple laptop at a lower price but I haven't actually "needed" the laptop for anything specific with the exception of maybe using Teachnet. It has never been required that I bring the laptop to class and I could probably do any assignment on a PC or a computer in the library just as easily as it could be done on my laptop. It is nice to have a compact and easy to travel computer however.
78.	no, I assumed we would be using these much more than we are
79.	I had no expectations when I bought the laptop. The university acted as if it would transform my education in some meaningful way, but the PC that I had prior to purchasing my laptop fulfilled all of my needs. Of course I did not have, nor was my computer equipped to handle, programs such as imovie and iphoto. However, learning and using these programs has not benefited me so much as it has given me a headache and made me very wary of technology. If anything, I think that the quality of my work when using programs such as imovie decreases, as my ideas are subjected to the limits of the program format and capabilities. I think that I would have been in contact with my professors and peers just as much with my old home email as I have been with my laptop. Overall, I don't think that the experience has justified the amount of money I paid for the laptop. Furthermore, I think that there has definitely been more attention paid to the use of technology than the quality of ideas.
80.	I think it is because we are able to research and do so much in class that we would not be able to do without them, but they are also a huge distraction because the Internet is free reign and not too many people pay attention to the instructors.
81.	I guess I'm really at a loss for why we have laptops at all. Most of my instructors fumble with them- not knowing how to use them. However, teachers like to give "technological-oriented" projects that would not be able to do themselves. It is not practical to take the laptop to placement classrooms. I feel that it was a lot of money spent on this for no real reason. Having A computer is essential, knowing how to use your computer as a resource is essential, but these goals can be met without an apple ibook.
82.	It meets my expectations, but i can't say they were great to begin with. It is a computer just

	like any other computer, except i HAD to buy it. It does not make me a better student. I use it because i bought it and it is around.
83.	Not really because as I just said we really don't use our computers but yet we were required to buy them.
84.	It is handy to have the laptop, but it was way out of my budget to purchase it, and I did not like that I was forced to purchase a mac, which is completely useless in other realms of the computer world (hard to find leisure programs that are compatible for mac) as well as equally annoying to already have a good computer at home but have to buy another one. Also found that a lot of teachers in the classroom are using DELL's for paperwork purposes etc, and the students are using the macs for reading tutorials and spelling etc.
85.	No! I don't feel in any way that it is a necessity to make students buy laptops. I have only truly needed it one time, for one activity. Yes, it's a convenience, but no it has not changed my life... other than depleting my bank account for something I will sell when I graduate.
86.	NO! I think it is stupid to require students who are already hard up to purchase laptops, when all the work can be done on computers they already own or on school computers.
87.	Yes, but there needs to be more trainning on what we have on them, because I have felt that I don't think we are using them to thier highest ability.

In what ways do you feel the Laptop Initiative has been of greatest benefit to your learning?

1.	using it at school
2.	Locating educational websites in class and using teachnet. Also, it is much easier to take notes in class using a laptop.
3.	It has taught me through alot of trial and error how to use the different programs such as imovie, power point, iphoto, teachnet, etc... and also kept me organized by having all of my documents in one place. It also enabled me to have very easy access to the internet where I could conduct valuable research at any given time to increase my learning of a certain subject.
4.	it has helped me excel in my education classes.
5.	It is convenient to take around. I can use it to study in a coffee shop or on the campus lawn.
6.	Hands on learning when we are learning how to use technology.
7.	Students are no longer bored in class because they have games to play and now we can work on homework from other classes and still pretend we are taknig notes.
8.	1. Organizing 2. Organizing 3. Organizing
9.	Learning how to use iPhoto, iMovie, Power Point, and communication on Teachnet.
10.	I can do videos
11.	I can now go to a coffee shop to work. However, all of the things that I can do on a laptop I can do on a desktop which is also much much cheaper. Desktops also break less often.
12.	It gave me something to watch DVDs and store MP3s, both of which came in handy while I was at work or on the bus.
13.	I can look up information about lesson plans any time I need to, I can play DVD's in class

	with the LCD player, I can use iMovie with my lesson plans as well.
14.	I have learned to use a computer more thoroughly. But I feel that I am spending too much time learning how to use the computer, and not enough learning how to become a teacher.
15.	Instant communication with profs.
16.	I've learned to use new software.
17.	It has benefited me in that it has allowed me to learn how to use a different operating system.
18.	I have been able to learn how to use things that are in the Mac format whereas before I strictly only knew how to work PCs.
19.	I got my own computer sooner than I would have if the Initiative wasn't in place. I didn't have to shop around for one either.
20.	learning technology and giving me more convenient ways to communicate.
21.	It has made me acknowledge that I need this technology to compete in my marketplace, and, maybe more importantly, to instruct my future students.
22.	I merely like the laptop because Apple makes high-quality products. Any computer benefits my learning. It did not have to be an apple laptop!
23.	My confidence with how i can intergrate technonlogy in the classroom.
24.	The Laptop Initiative has had no effect on my learning process! In 303, we use it for word processing and making webpages - hardly anything worth purchasing a new laptop. We had one online chat session during class, but it was practically pointless and could have been achieved just as easily using the chalkboard. In other UTeach classes, we've had online chats from home, which makes much more sense. If you're in class together, you might as well speak to one another. Otherwise, chats from home can be accessed by any type of computer with internet access.
25.	It forced me to get a new laptop before my old laptop crashed.
26.	While I don't believe that I have fully utilized all the benefits of my laptop, just having a resource to make quick searches online when I don't understand something in lecture has helped me with class discussions and participation without falling behind.
27.	i am able to use it in other classes and in my daily life.
28.	I enjoy the multimedia aspect of it. I get to watch video clips of kids solving math for my methods class, listen to music in my leisure, and create web pages and portfolios for my professional career.
29.	It helps me stay organized.
30.	I do not think that it was a laptop - it is the general use of a computer and internet.
31.	My laptop has become my full-time computer and I use it everyday for many other things on top of in the education school. Also, since wireless Internet has become more accessible, I can use my laptop in the majority of the places I go.
32.	I think there is no possible way a laptop helped me learn better.
33.	I dont have to spend as much time writing notes, I can concentrate more on the topic than jotting it down.

34.	None
35.	I don't think it has benefitted my learning in anyway. I think everything I could do at my at home computer
36.	It's nice to have plenty of time to work on your projects. I'm glad I learned how to use Macs, even though I almost still prefer PCs. Wonderful to have in the schools.
37.	it allows me to work on things whenever it is convienent for me
38.	Giving me lots of experiences.
39.	none
40.	The laptop gives easy and instant access to volumes of knowledge. It also provides a valuable way to explore with interactive software.
41.	It may be a faster and more convenient way to take notes.
42.	Note taking Power points for lectures e-mail projects, instead of printing out research lesson plans etc. etc. etc.
43.	For me personally, I do like to be able to type my notes from class on my laptop. However, like I said before, most professors ask us to close our laptops during class because they worry we are using the internet. Why have a laptop or wireless internet if we aren't allowed to use them during class?
44.	able to transfer info to my prof. with ease
45.	It has good graphics and a few good programs like i-Movie and i-Photo.
46.	It is easy internet access when the computer labs are full.
47.	I have learned about many programs and feel much more comfortable with creating lessons with these skills.
48.	It helps us make movies and storybooks, that are important for education preservice teachers.
49.	I have learned to stretch myself and try new things, new programs and such on my computer. I am much more profiecient in a variety of components on the computer because of the laptop initiative.
50.	Retaining all the lecture notes.
51.	Opened up my eyes to what the capablilities that a macintosh has.
52.	The always advancing technology allows me to keep up-to-date and use the skills in my teaching.
53.	i can do work anywhere anytime regardless. it gives me flexibilty and access to information readily
54.	Having a computer in class give me more opertunities to learn/search for inforamtion. I can also control my learning. However class time may not the time to search and control your own learning. Class time is instructional time for an instructor to teach you what they can not what you can find on your own.
55.	As I said earlier...the benefit of being able to do research during a class assignment has been helpful.

56.	I will admit that since I type faster than I write, having a laptop enhances the quality of my note taking (although most of my classes do not give formal notes any more).
57.	Having a laptop in order to communicate easily with my classmates and instructors is the greatest benefit. I also think that the wireless network has been very beneficial.
58.	During powerpoint presentations.
59.	I can take learning with me in a small electronic package becauuse of the material stored on the hard drive and because of the ethernet andn wi-fi. the teaching resources online are invaluable in using this laptop
60.	I have a new laptop and don't have to buy one later.
61.	It has helped me take better notes in class - because I type faster than I write. Convenience has been the primary benefit yo my lap top.
62.	My work is more organized and all in one space
63.	It's easily portable, lightweight, fast, and has lots of memory. I bring it with me everywhere and use it during class to look up whatever I want when I need to.
64.	it's convenient for doing work away from home, otherwise, nothing else
65.	It's really convenient, and I like being able to carry it around and do work (or play) anywhere.
66.	I like that I can take it anywhere and that so may places in Austin offer wireless internet.
67.	i've learned how to use a mac
68.	I can take my computer wherver I need to go, such as a coffee shop or store. So this makes it easy to do schoolwork no matter where I am.
69.	all the students are on the same page, with their computers that is
70.	It aids in the availiablity of many differnt resources.
71.	It has greatly enhanced my research and the mobility that it gives me is great too. I like being able to learn about many things on the Internet while I am at school.
72.	It hasn't. I have used computers plenty in my education.
73.	I can type faster
74.	none that I can really think of other than the ease of access to the internet on campus. I found that taking notes on the laptop is cumbersome because it is difficult to draw graphs etc , and to quickly add extra notes throughout lecture to something that you may have already taken notes on, also you cannot easily flip through pages and find what you are looking for, you are limited to seeing only sections of a page on the computer screen as a opposed to seeing a whole entire paper page in front of you.
75.	I have lots more time during class to catch up on my e-mail.
76.	None
77.	IT has given us many different ways to present ideas and projects to our classes.

List at least three things that instructors could do to improve the classroom learning and teaching environment using the laptop.

1.	interactive activities/websites/chats
2.	-have more research assignments -try to utilize all of the different programs on our computers -encourage using the calendar and stickie notes features on the laptops to keep us more organized (maybe give an overview of all of the features at the beginning of the semester)
3.	presentations notes group discussion boards
4.	i dont really know
5.	No more boring powerpoints
6.	The only thng that would improve actually learnnig on the laptop would be if we did more individual work wtih the laptops. Partner activities are usually done mostly by the partner that likes to use the computer more or knows more about it so the others never really learn.
7.	1. In class networking so we can share harddrives and look at other peoples course folders 2. More collaborative online projects. 3. Require discussion board posts.
8.	show their lectures on Power Point post their notes and resources online have class dicsussions on teachnet
9.	I dont think they need to use the laptop to improve classroom learning and teaching. What they need to do is make the learning more student centered and you do not need a laptop in order to do this.
10.	Make all journal-type assignments an in-class activity submitted via email so that each student can be held directly accountable and they facilitators/coordinators don't have to chase us down about doing them.
11.	We could explore web sites related to subject material in class on a regular basis. Spending more time on the web portfolio unit so that students could get more of a grasp of the process. Exploring the programs available on the laptops such as garage band, iPhoto, quicktime, etc.
12.	Lecture more, adn have class discussions, instead of relying on the laptop for teachnet discussion. Create projects that genuinely need the laptop, and that don't seem as if using the laptop is the only goal. (i.e Mosck parent power point conference)
13.	Let us participate in online discussions in class. Have a preferred method of communication (e.g. all PDS teachers MUST use Teachnet for class communication) Less paperwork, more papers allowed to be submitted electronically.
14.	Have us do in-class assignments on the laptop rather than all out-of-class assignments. During the first semester, it would help to have someone come during class time to help with the new software.
15.	NOT use the lap tops so much. It is uneccesary to be forced to take notes, etc on the lap top sometimes.
16.	more REAL ways on how to integrate computers in our lessons
17.	-Have us visit websites and learning tools in class -Be informed on the technology themselves -Not make us bring them if we're not going to use them.
18.	don't revolve the whole class around the laptops. I've sat in classes where I haven't learned

	anything but how to make an imovie...that doesn't help me become a better teacher. Also, if there is a technical difficulty, students shouldn't be penalized because their computer isn't working when something is due.
19.	Assign more uses just for the laptop. Use the laptop for more research in the student-teaching classroom, such as Scribe. Focus more attention in the laptop and it's dimensions that are particular to my discipline.
20.	Not worry about open laptops. Encourage students to search for info online, instead of prohibit. Encourage interactive websites to use during class.
21.	????????????????
22.	the web portfolios are so difficult because many are not as computer literate as the instuctor expects and it is difficult to learn all of the things needed to learn in a semestera for creating a website. I feel that it should not be this difficult and it gets frustrating trying to keep up. Every detail matters.
23.	1. Some could be more familiar with some of the more advanced applications-like making a web page 2. Some of my professors Teahnet us too frequently-there should be a time when you don't have to respond to them right away or else they shouldn't be able to teachnet you during certain times, like after a certain time of day or on the weekend. 3.Just be familiar with computer
24.	?
25.	Use a laptop only during class - don't expect students to download things etc. during the week outside of class.
26.	use the laptops more for group activities, make sure there is Internet access, incorporate interactive web activities
27.	If UT is going to have students participate in this laptop iniciative there must also be a class that teaches you not only how to use it and use it effectivly, but teach us ways it can be incorporated into the classroom. I don't understand why a laptop is more beneficial than any other type of computer.
28.	Im not sure right now.
29.	Nothing at this time
30.	provide us with internet access at the schools we teach at
31.	Monitor people's use! So many people 'pass notes' and do other things during class. Have more activities actually using laptops, such as internet searches. Have more outside activites, such as chats, that use the laptops.
32.	Be a better model. Allow more classtime to explore different functions. Be more creative with assignments. Set higher expectations for the students and hold them accountable for those expectations.
33.	- Interactive programs/software - Classroom polls with discussions - Quick online quizzes to assess knowledge/understanding
34.	The use of the laptop isn't very necessary in my class. I think that it is actually more helpful not to use the laptop most of the time because sometimes students get distracted using the internet during class.
35.	Actually use the laptops...I use it in class like twice a semester and that is not making it

	worth my money.
36.	Require us to use it more in class. Find other uses for it besides making imovies.
37.	Actually use the laptop in the class, instead of using it just for at home projects. More assignments that have to do with apple laptops.
38.	1. Use computers with a purpose. Don't just include the laptop because 'you have to'. Do something of value with them.
39.	1. Provide lecture notes (at least an outline) on Bb before the class 2. make sure the rooms have plenty of outlets. (Outlets that don't spark when you try to use them...) That's all I can think of right now.
40.	1) Limit internet use in the classroom. 2) Include a project using the laptop. 3) Using the laptop as a way to have more group discussion.
41.	- Provide classroom notes - Not require print copies when you can send via e-mail or Teachnet - Make internet more a part of classroom activiites
42.	Not be scared to let us take notes on our laptop. Most of my professors feel uncomfortable seeing those white tops open while they are teaching. Let profs know that I will not ever be listening intensely to a three hour lecture. Just because I am usign my laptop does not mean I am checkign my email. Most professors would not let you have your laptop open because they thought you were 'chatting' VERY ANNOYING...It made us all furious to actually ahve them in the first place. Second--be realistic about the projects they give. Third--when they provide "technical support" make sure they allot enough time. Make sure the technicians actually understand our needs...I NEVER ONCE went into a training session and actually learned something. The people were never prepared, didn't speak understandable English, or did not understand that our needs were from opening the application on...they were always too advanced and too fast.
43.	It is to late for the treachers. THey learn how to do little tricks, but will never understand the full potential behind the tchnology because they do not care. My junior high teacher I observed could not even get her screen resolution set properly.
44.	In all honesty, I see no benefit to using a laptop in class that could not be attained in some alternate (LESS EXPENSIVE) way. EVERYTHING I have used my laptop for could have just as easily been accomplished on my home desktop computer.
45.	They could use programs that are only offered through the Mac.
46.	1. Post more information online for students to access, such as useful resources, readings, book lists, etc. 2. Show students how to use a variety of programs that are beneficial to educators. For example, Inspiration, Atomic Learning, and United Streaming. 3. Give studensts lesson plans that incorporate learning and using a laptop in a variety of subject areas such as math, science, language arts, social studies, art, music, pe, others??
47.	There isn't really much need for a laptop. I think we could do without this initiative.
48.	1. education links to websites in the bookmarks broken down into categories so as to save time in lesson preparation 2. use a wireless projection remote to advance pages and move around on the screen 3. store grades on the laptop, but also backup on some remote server everyday.
49.	in-class computer assignments, on-line discussions in class, projects in class
50.	They could incorporate the lap top into the lesson.

51.	could ask use to use it during class more, like doing online searches together or to research various topics that relate to the class material; but not everyone in my classes has laptops through the COE laptop initiative.
52.	make laptop activities more hands-on and involved, don't forgo in-class discussions for on-line discussions, don't allow laptops to be open and in use during lectures, don't allow students to rely solely on internet-based research for projects
53.	1. Begin the year with expectations about using the laptops; for example: students will submit all assignments online; students will learn to connect their laptops to share information; students are required to bring their laptops to class everyday. 2. The instructors should be able to TEACH anything they ask their students to do. For example, if an instructor wants his or her students to create a webpage, the instructor should have practice in doing this, and he/she should be able to show an example of his or her own work. 3. Instructors should walk through the class periodically to make sure students are not using instant messenger, checking email, or being off task during instruction.
54.	I'm not sure, my instructors haven't used them at all.
55.	use it in class require me to have it in class use it in class
56.	1. Require that the laptop be brought to class. 2. At least create a computer oriented activity to do in class. 3. Have quizzes that can be taken on a laptop or discussions that can be done on the laptop.
57.	1. show ways that these computers will be useful to us after we gradute (like some programs we can use on our computer while we are teaching) 2. incorporate the computer into more assignments 3. show us various ways that these specific computers would be helpful for our classes now and when we student teach
58.	web based lessons, using differnt graphing programs, more use of the internet
59.	I think they could give us more Internet resources and things that we can do on our computers instead of only listing books, etc. I also think that they should not allow students to get on the Internet during a lecture unless their lecture is also online for us to view. The third thing would be to teach us to use our laptops in the classrooms that we will be the teachers of in the future - we never talk about how these will be good tools for our teaching.
60.	They could worry about teaching the material well and not worry about integrating a computer into everything.
61.	Actually use the computers by maybe placing information up on the overhead so we could copy the notes. I don't know, regardless of what they do I think people are still going to get off task and surf the net, check e-mail or instant message.
62.	1. Actually use them for something other than surfing the web. 2. Provide engaging activities that require the laptop. 3. Spend more time letting us use all the cool things that come in the package.
63.	We shouldn't have to have them
64.	1. Provide more trainning so that we feel like we can do the assignment. 2. Use more software in which can be used in the classroom with students 3. Use them as much as we can, becasue they need to be used b/c we are made to buy them.. we need to feel like they are a good investment.

Is there any other information you would like to share about your experience of using laptops in teaching and learning?

1.	no.
2.	The only thing that bothered me about the laptops was that the memory is not quite as big as it should be, and alot of the times the computer would run very slow and make it a bit frustrating when working on some assignments. Maybe in the future, they might want to look into programing in a bigger memory card.
3.	i hate how much they cost!!! the ITS desk should help us more when they break - because they do break
4.	i like the labtop but i dont like how its required to buy. what if you already had another labtop? all the above questions are geared toward the word 'labtop'- it never specifies the Mac labtop we had to buy. Although, I do like my Mac.
5.	The labtop has been most useful in my methods and student teaching. In my methods class, we did a lot with the internet and finding websites with primary documents. The labtop was important in that since. However, in my other classes, my classmates and I often surf the internet while the teacher lectures. (meaning we don't pay attention)
6.	The laptop has wasted hours of my time in class when could have been learning how to truely be a better teacher. It was expensive and not even that nice of a laptop. The majority of the world uses PCs so it was very diffcult to communicate between computers wth different formats and made work impossible to transfer sometimes to my home computer. My parents were very angry because they didn't believe I should have to get a mac. If I had to get a laptop they thought I should be able to get one that I felt was worth the money and one that I will actually use, even after college.
7.	I think it is redicuous that we are required to buy laptops if we are in education
8.	Laptops are overrated. The only advantage they have over desktops is thier mobility. The things I am asked to do with the laptop I can do just as easily on my desktop which is significantly cheaper. When they are used in class many people are not paying attention because they have a laptop. They are surfing the web, playing games, or chatting online. Just becuase you include laptops in the classroom it does not make it a better learning experience. If a laptop influences your expectations of yourself then you have a serious problem. Regardless of my access to technology, I have high expectations of my work and the work of my peers. One last thing. There are much cheaper laptops on the market that are just as good. Also, the schools that I have visited have not used apples. They use PCs. Why can't we buy PC laptops that are cheaper, just as good, and similar to those that we will be using in the field??
9.	These laptops have honestly been more of a hinderance than anything. Frequently during class one or more students, myself included, can be seen surfing the web or playing games or otherwise not paying attention exclusively because of the laptops. While I don't feel that communication or quality of instruction was in any way lacking in the courses I took, I don't feel that these laptops had any bearing whatsoever in maintaining that quality with the exception of ONLY one lesson. This most certainly does not justify the cost of the machine. Secondly, I find that the requirement of a specifc brand (Apple Macintosh) laptop is completely absurd considering that the software we use is almost exclusively provided by Mircosoft and just as readily available on a PC should a student be more comfortable with that platform. Finally the use of this laptop accomplished nothing that a couple days in one of the campus' numerous computer labs (which my tuition and fee dollars ALREADY pay for) would not have similarly facilitated. To FORCE students to spend another $1,000+ on equipment that our money has already made available is utterly ridiculous.

10.	There are still many things I would like to learn about my laptop and I wish U.T. would focus a bit more on those programs since they forced the students to buy them in the first place.
11.	Laptops make learning more fun, and interactive. I also find myself being more confident with the use of computers because of it. I think that the workload has probably been increased from past semesters because of the use of the laptop. This should be good, but I do not know how practical it actually is. As I stated above, some of the projects seemed geared more to justifying the purchase of the laptop, than actually having any educational value.
12.	Not at this time.
13.	I think that forcing education majors to buy a lap top is unfair. Whether financial aide covers the cost, it seems a bit extreme and unnecessary. Many still use their PCs that they purchased. And that alone makes it seem as if buying the ibook is a waste since there are people who already have computers (such as myself). Although I do see the benefits in learning how to use a mac and the programs it offers, it has not made me that much more computer knowledgeable. I think that the purchase of an ibook should be made OPTIONAL.
14.	some teachers spend more time trying to teach us how to do a project on the laptop than actually learning about teaching. THAT MAKES ME MAD!
15.	Make students more aware that there are scholarships available to get these laptops.
16.	If you were to mandate that all students have a computer, that would be understandable; however, I truly disagree with the fact that you're making all education students purchase an Apple laptop. I had a PC laptop and could have easily done all of my class assignments on there in the same way. If you just made all of us buy the laptops so that teachers could all get free Apple computers, that is truly and utterly WRONG!!!!
17.	Laptops would be useful is we could use any laptop.
18.	Laptops are good, and the program is good for us as learners, but the cost is way too high for a mandatory requirement.
19.	Your questionaire is ridiculous. It could just as easily apply to any type of computer usage. The phrase "because of the laptop" is ambiguous. If in previous semesters I was using computers just as often as I do now that I own a College of Ed. laptop, then I must strongly disagree that my learning practices have changed. You need to ascertain your informants' previous level and means of computer usage. Without this information, your survey is worthless in determining how the Laptop Initiative requirement has affected UTeach students.
20.	I really do not like the organization of the web portfolios because i know little about creating websites and the web tutorials really don't help. Sure they get you started on things but there is so many other details and step that you are still lost if you don't have a step by step guide or a few months everyday to practice doin the same steps to learn.
21.	No.
22.	I am a fan of laptops for my own personal use. I owned a laptop prior to this Apple laptop because a laptop agrees and enhances my lifestyle. I disagree with making students buy a laptop. It is important for students to have access to a computer, but it does not have to be a laptop.
23.	No.
24.	none

25.	Laptops are good, Requiring Macs is bad
26.	Nice to have, but I mostly just use it for pleasure. I resent being forced to buy a Mac. There's good support for them at UT.
27.	I think the laptops will become education's best friend once the proper reforms are set.
28.	I enjoy using my laptop at home and around campus. I take it to my education class, but I don't think it is absolutely necessary in the classroom. I learn more during the class if my attention is focused on the instructor rather than my laptop.
29.	Students should not be required to buy a laptop. As a student, I have other things that are more important for me to spend my money on. We are not utilizing this expensive piece of equipment half as much as we should be. I believe that I could get through the PDS without ever NEEDING this laptop. Please stop requiring students to buy it. It is a waste of money!!
30.	I like that there's a help desk for us but I have constantly had problems with the Mac shutting down on me and not having enough memory
31.	I do not think that laptops should be required. Some cannot afford them and they can always use the ones on campus.
32.	I think they are a good idea, but not really that practical. We rarely use them in our schools and I feel like it is more distracting during class than it is helpful.
33.	I think these laptops can be a bad idea sometimes, because it loses our attention in class. We surf the web and check email A LOT more often, even when laptops are not needed in the class for that day.
34.	In most of my classes in the PDS, the laptop was helpful and beneficial. However, in Math Methods, it seemed to be a waste of time. I"m not sure if this was a result of the setup of that particular class, or the way that the computer is/should be used within the teaching of math.
35.	This has been my first semester using a laptop for school AT school. It's a pain to carry around--literally--and I can't bring most of my textbooks because I simply can't carry that much weight! Overall, it seems like to not use the technology that's available is a shame, because so many (high school) students now choose--or are required--to use a laptop in class...if the teachers aren't comfortable with using them on a daily basis in a school environment, how can we instill confidence in our students?
36.	It's been a great experience.
37.	Love it!
38.	No thanks.
39.	Do not make people get an apple. This survey may seem negative and believe it or not I enjoy my computer. I just do not think it is right to require an apple. All the applications we used could go with PC's as well. HAHA as a matter of fact I am typing on my PC at home right now...I have had my laptop for two years--that should tell you something...
40.	Students do not learn more in class with a laptop. Some use them to take better notes, but far more just check their email with it or surf the net. Takes these out of the class room please.
41.	Perhaps if this program was more effectively orchastrated, I would have better comments. As it is, my learning has not been impacted for the better because of the Laptop Initiative. In addition, the requirement of an Apple laptop is completely ridiculous. SO much more

	could have been accomplished on a Windows based system, since there is more software available. At the very least, students should have had the option to choose whichever brand they desire (meeting minimum specs) since I have yet to see any benefit to every student having an Apple. What a monumental waste of my money.
42.	I think that laptops are good to use in the classroom. A better way to use them would be to have students buy their laptop of choice and require specific programs on it. That way, some computers, like pcs, can still be used if people don't want to buy an extra computer.
43.	I feel that any brand of laptop would have been sufficient to meet this demand.
44.	My lap top has been helpful in learning (better note taking) and I am able to use it for teaching (power point); yet, I feel like we were mislead in the amount we were going to use the lap top in class.
45.	I think my university needs to have a greater radius to their wireless network. It is so frustrating that some classrooms get no wireless connection, which makes having the laptop and internet connectability in some classes useless.
46.	not used at all during student teaching semester
47.	I think the laptop initiative sounds good, and laptops can be WONDERFUL tools to use in the classroom. However, if the instructors do not know how to use them, or the instructors do not use them effectively, they are completely useless. P.S. This survey took me way longer than 10 minutes.
48.	no.
49.	I don't really think a laptop leads to better learning or teaching. I do like the Apple laptops better than the PC's, but I don't really think the laptop is neccessarily better than a stationary Apple.
50.	it seems that the price that we pay (however discounted that number is) we would be using these computers much more. what I do not understand is the need to have all of these be the same computer. my work and the quality of my work has not changed since I had to buy this computer. I am still doing the same types of assignments and the same work that I was doing before. now, it is just on a different computer than before. they need to explain to those students who are about to buy this for their PDS classes that this is something that will be used and that they will get their money for. just saying that it is a requirement is not enough.
51.	Too many people, including myself, have a hard time with being distracted by the laptops....I also think they should have been cheaper because it was hard to pay for it.
52.	It is heavy, and i would rather not carry it around. This survey makes me look like i hate the computer. This is not so. It is a good computer, but i did not appreciate the fact that i had to buy it in order to become a special educator with a degree from the university of texas. I do not have much money, and the financial aid process turned my hair grey in spots. A laptop is a great thing to have, but i already had a computer and there are hundreds available to me at the university at any time i wish. Just worry about teaching. Good try though.
53.	I don't think they should have made this a requirement. If I have used it 5 times throughout these 2 semesters to make an Imovie or any other project it has been a lot. I feel we could have used any laptop and just downloaded teachnet or any other software we needed, or at least that is what I did with my compaq at home, downloaded teachnet. For me, I could have used this money for something else especially because I had jus bought a compaq laptop a few months before I changed my major to education and was told I needed to buy an apple laptop.

54.	I think it would be helpful to have a message board available for students who need or want to buy a mac laptop, or are looking to sell theirs after they complete the uteach program. It would be helpful to be able to contact people to either sell your laptop, or buy a used one at a cheaper price than UT sells them.
55.	I think it is totally a waste of money for the laptops... especially because they are Macs. There was really no reason to buy one for my program. Everything I need it for I do at home or on my PC laptop that works better. GIVE US A CHOICE IN PC OR MAC!!!
56.	It is useless to me. My mentor teachers have told me that we don't need to own our own laptops to work in schools, that the schools we will work in will provide the computers we need.
57.	I feel that it would help for some people in the area of cost if the COE would possibly but the cost into our fees a little at a time, so that when the student is ready for the laptop they don't have to spend $1,000 all at once.

References

Abdal-Haqq, I. (1995). *Infusing technology into preservice teacher education*. Washington, D.C.: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED389699).

Albright, M. (1996). *Instructional technology and higher education: Rewards, rights and responsibilities. Keynote Address at the Southern Regional Faculty and Instructional Development Consortium*. LA: Baton Rouge. (ERIC Document Reproduction Service No. ED392412).

Anderson, R. J. (2001). *Toy or tool: Student perceptions of a notebook computer university*. Unpublished doctoral dissertation, University of North Dakota, North Dakota.

Anderson, J.A. and Adams, M. (1992). Acknowledging the learning styles of diverse student populations: Implications for instructional design. In. L.L.A Border and N. Van Note Chism (Eds.) *Teaching for Diversity*. New Directions for Teaching and Learning. 49 (pp 19-34). San Francisco: Jossey-Bass.

Angelo, T. (1996). Relating exemplary teaching to student learning. In M. Svinicki and R.J. Menges (Eds.), *Honoring exemplary teaching*. New Directions for Teaching and Learning, 65, (pp 57-64). San Francisco, CA: Jossey-Bass.

Astin, A. (1985). *Achieving education excellence: A critical assessment of priorities and practices in higher education*. San Francisco: Jossey-Bass.

Bates, A. W. (Tony). (2000). *Managing technological change: Strategies for college and university leaders*. San Francisco: Jossey-Bass Inc.

Bates, A. W. (Tony). (2001). Beyond button-pushing: using technology to improve learning. In Epper, R. & Bates, A. W. (Tony) (Eds.). *Teaching faculty how to use technology: best practices from leading institutions*. (pp. 141-152). Westport CT: Oryx Press.

Bates, A. W., & Poole, G. (2003). *Effective teaching with technology in higher education: Foundations for success*. San Francisco: Jossey-Bass Inc.

Bauer, C. (2003). Undergraduate student perceptions, attitudes, and expectations of a laptop initiative. Unpublished doctoral dissertation, Capella University, Minnesota.

Beck, J.A. & Wynn, H.C. (1998). *Technology in teacher education: Progress along the continuum*. (ERIC Document Reproduction Service No. ED424212).

Belanger, Y. (2000). *Laptop Computers in the K-12 Classroom*. ERIC Digest. Retrieved June 29, 2004, from http://www.ericdigests.org/2001-1/laptop.html

Bianchi, A. B. (2004). “One to one computing”: wave of the future or expensive experiment? Forecast Emerging issues in public education, 2 (1), Retrieved August 1, 2004, from http://www.hflcsd.org/nysbjournal.pdf

Bonwell, C. C., & Eison, J.A. (1991). *Active learning: Creating excitement in the classroom*. ASHE-ERIC Higher Education Report No. 1. Washington, DC: The George Washington University, School of Education and Human Development.

Brown, D., & Petitto, K.R. (2003). The status of ubiquitous computing. Educause Review, 38 (3), 25-33. Retrieved May 25, 2004, from http://www.educause.edu/ir/library/pdf/erm0331.pdf

Brown, R. (2004). *Colleges and universities with laptop or notebook initiatives*. Retrieved August 1, 2004, from http://www.wcmo.edu/wc_users/homepages/staff/brownr/NoteBookList.html

Buckley, K. P. (2003). *How principles of effective online instruction correlate with student perceptions of their learning.* Unpublished doctoral dissertation, University of Central Florida, Florida.

Bures, E., Abrami, P., & Amundsen, C. (2000). Motivation to learn via computer conferencing. *Research in Higher Education*, 41(5), 593-621.

Cassidy, M. (2004). *Bookends : the changing media environment of American classrooms*. Creskill, NJ: Hampton press.

Chickering, A. W., & Ehrmann, S. C., (1996). Implementing the seven principles: technology as lever. AAHE Bulletin, 49 (2) 3-6.

Chickering, A. W., & Gamson, Z. F., (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 39 (7) 3-7.

Chickering, A.W., & Gamson, Z.F., (1999). Development and adaptations of the Seven principles for good practice in undergraduate education. *New directions for teaching and learning, 80,* 75-81, San Francisco, CA: Jossey-Bass.

Cleary, B. A. (1996). Relearning the Learning Process, *Quality Progress*, 29 (4) 79 - 85.

COE, College of Education at the University of Texas at Austin (2004). *Laptop Initiative for Future Educators*. Retrieved May 10, 2004, from http://www.utexas.edu/education/laptop.html

Cook, G. (2002). Laptop lessons. *American School Board Journal*, 189 (7) 12-16.

Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.

Daniel, J.S. (1996). *Mega-Universities and Knowledge Media: Technology Strategies for Higher Education*. London: Kogan Page.

Davis, B. G. (2001). *Tools for teaching*. San Francisco: Jossey-Bass.

Dean, D. E. (2000). *Infusing technology in K-12 classrooms: A study of one method used to prepare teachers to integrate information technologies into their teaching.* Unpublished doctoral dissertation, Gonzaga University, Washington.

Desmarais, N. & Luther, J. (1997). Innovations Affecting Us: Technology to Learn Anytime Anywhere. *Against the Grain*, 9 (4) 84-91.

Dockstader, J. (1999). Teachers of the 21st century know the what, why, and how of technology integration. Technological Horizons in Education Journal, 26, (6), 73-74. Retrieved June 2, 2004, from http://www.thejournal.com/magazine/vault/A2084.cfm

Falba, C., Grove, K., Anderson, D., & Putney, L. (2001). Benefits of laptop computers for elementary teachers. *Journal of Research on Technology in Education*, 33 (5). Retrieved July 2, 2004, from http://www.iste.org/jrte/33/5/falba.cfm

Fink, A. & Kosecoff, J. (1998). How to conduct Surveys: A step-by-step guide, 2nd Ed., Thousand Oaks, CA: Sage publications.

Flamer, S. (1983). Assessment of the multitrait-multimethod matrix validity of Likert scales via confirmatory factor analysis. *Multivariate Behavioral Research*, 18, 275-308.

Gall, M. D., Borg, W. R., & Gall, J. P. (1996). Educational research: an introduction (6th Ed.). White Plains, NY: Longman.

Gay, L . (1996). E*ducational research competencies for analysis and application* (5th Edition). Englewood Cliffs, NJ: Merrill.

Gamson, Z. F. (1991). A brief history of the seven principles for good practice in undergraduate education. In A. W. Chickering & Z. F. Gamson (eds.), *Applying the seven principles for good practice in undergraduate education. New directions for teaching and learning*, 47, (pp 5-12), San Francisco, CA: Jossey-Bass.

Gerlach, J.M. (1994). Is this collaboration? In Bosworth, K. & Hamilton, S. (Eds.) Collaborative learning: Underlying processes and effective techniques, *New directions for teaching and learning*, 59, (pp 5-14), San Francisco, CA: Jossey-Bass.

Guidera, S. G. (2000). *College teaching in the virtual classroom: Faculty perceptions of the effectiveness of online instruction*. Unpublished doctoral dissertation, Bowling Green State University, Ohio.

Hanson, D. H. (1998). *Diffusion of a telecommunication and computing innovation at Waldorf College*. Unpublished doctoral dissertation, Iowa State University, Iowa.

Hattie, J., & Jaeger, R. (1998). Assessment and classroom learning: A response to Black and Wiliam. Assessment in Education: Principles, Policy and Practice, 5(1), 111–122.

Huang, H. (2000). Moore's theory of transactional distance in an online mediated environment: Student perceptions on the online courses (Michael G. Moore). Unpublished doctoral dissertation, Seattle Pacific University, Washington.

Herman, J. L. (1994). Evaluating the effects of technology in school reform. In B. Means (Ed.), *Technology and education reform: the reality behind the promise*. (pp. 133-167). San Francisco: Jossey-Bass.

Johnson, D. W. & Johnson, R. T. (1999). Learning together and alone: Cooperative, competitive, and individualistic learning. (5th Ed.), Boston: Allyn & Bacon.

Johnston, M., & Cooley, N. (2001). *Supporting new models of teaching and learning through technology*. Arlington, VA: Educational Research Service.

Jonassen, D. H., Peck, K. L. & Wilson, B. G. (1999). *Learning with technology: a constructivist approach.* New Jersey: Prentice Hall Inc.

Juliano, B. A. (1997). Power pedagogy: Integrating technology in the classroom. 30th Association of Small Computer Users in Education (ASCUE). Summer Conference. South Carolina.

Kariuki, M. (2000). *The impact of laptop computers on preservice teachers' practicum experience*. Unpublished doctoral dissertation, Ohio University, Ohio.

Keiper, T, Harwood A., & Larson, B. (2000). Preservice teachers' perception of infusing computer technology into social studies instruction. *Theory and Research in Social Education*, *28*(4), 566-579.

Kontos, G. (2001). The laptop university: a faculty perspective. *Educational Technology Review*, 9(1). Retrieved July 12, 2004, from http://www.aace.org/pubs/etr/issue1/kontos.cfm

Kontos, G. (2002). Laptops and university students: a review and survey. *Educational Technology*, 42 (4) 55-59.

Larson, A. (1995). Technology education in teacher [reparation: Perspectives from a teacher education program. Retrieved July 11, 2004, from http://www.ed.uiuc.edu/tta/conferences/AESA-95.html

Lever-Duffy, J., McDonald, J.B., & Mizell, A.P. (2003). *Teaching and learning with technology*. Boston: Allyn and Bacon, Pearson Education Group.

Levine, A. (1997). How the academic profession is changing. *Daedalus*, 126 (4), 1-20.

Lord, J. & Bishop, J. (2001). Information technology assessment: Floyd College. *Community College Journal*, 72 (2), 22-26, 31.

Lowry, P. (2001). *The impact of a higher education laptop initiative on student's attitudes toward mathematics and achievement.* Unpublished doctoral dissertation, Wayne State University, Michigan.

LTC, Learning Technology Center (2003). Laptops. Data Stream Newsletter. The University of Texas at Austin. 12 (1).

Mason, C., Berson, M., Diem, R., Hicks, D., Lee, J., & Dralle, T. (2000). Guidelines for using technology to prepare social studies teachers. Contemporary issues in technology and teacher education, 1(1), 107-116. Retrieved July 11, 2004, from http://www.citejournal.org/vol1/iss1/currentissues/socialstudies/article1.htm

McKeachie, W., Pintrich, P., Yi-Guang, L., & Smith, D. (1986). T*eaching and learning in the college classroom: A review of the research literature*. Ann Arbor, Michigan: University of Michigan.

McKeachie, W. (1999). *Teaching tips: strategies, research, and theory for college and university teachers*. (10th ed.), Boston: Houghton Mifflin company.

Mehlinger, H. D. (1996). School reform in the information age. *Phi Delta Kappan, 77*(6), 400-407.

Milman, N.B., & Heinecke, W.F. (2000). Innovative integration of technology in an undergraduate history course. *Theory and Research in Social Education, 28* (4), 546-565.

Murray, J. P. (1995). *Successful faculty development & evaluation: the complete teaching portfolio.* Wiley, John & Sons.

National Center for Education Statistics (2003). Technology in schools. Retrieved July 15, 2004, from http://nces.ed.gov/pubs2003/tech_schools/chapter7.asp

Neuman, W.L., (2003). *Social research methods: qualitative and quantitative approaches*. 5th ed., Boston: Allyn and Bacon.

The Node Learning Technologies Network (1999). LTReport: The laptop college. Retrieved July 21, 2004, from http://thenode.org/ltreport/laptop/ltreport-vol1-no1.pdf

Olson, D. M. (2003). Student perceptions of hybrid classes at a notebook university (North Dakota). Unpublished doctoral dissertation, The University of North Dakota, North Dakota.

Pascarella, E. T. & Terenzini, P. T. (1991). *How college effects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Resta, P. (Ed.) (2003). *Information and communication technologies in teacher education: a planning guide*. Paris, France: United Nations Education, Scientific and Cultural Organization (UNESCO).

Resta, P., Abraham, L., Gerwels, M. & Tothero, M. (2004). Establishing a ubiquitous computing environment for teacher preparation students and faculty: The University of Texas at Austin laptop initiative. *Society for Information Technology and Teacher Education International Conference.* 2004(1), 2570-2575. *Retrieved July 22, 2004, from http://www.utexas.edu/education/UTAustinLaptopInitiative.pdf*

Roblyer, M. D. & Edwards, J. (2003). *Integrating educational technology into teaching*, 3rd Ed., Upper Saddle River, NJ: Prentice-Hall.

Ross, J. M. (1989). Critical Teaching Behaviors as Perceived by Adult Undergraduates. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Sargeant, D. (1997). *Moving toward a mobile teaching and learning environment: using notebook computers*. Retrieved May 5, 2004, from http://www.crk.umn.edu/technology/thinkpadu/thinkpadmobile.htm

Schank, R. C. (2000). *Future perspective: a vision of education in the 21st century*. Retrieved May 2, 2004, from http://www.thejournal.com/magazine/vault/A2598.cfm

Seton Hall University (2001). Evaluation of general satisfaction, technology use, and student perceptions of the impact of mobile computing on the learning environment at Seton Hall University. Retrieved May 7, 2004, from http://technology.shu.edu/webs/tech/mainengine.nsf/resources/Moblie+Assessment+Document/$file/mobile_assessment_report.doc

Slavin, R. E. (1995). *Cooperative learning: Theory, research, and practice*. (2nd Ed.). Boston: Allyn & Bacon.

Snyder, J. M. (1995). *An investigation into the factors that encourage university faculty to use information technologies in their teaching*. Unpublished doctoral dissertation, University of Nebraska, Nebraska.

Sorcinelli, M. (1991). Research findings on the seven principles. In A. W. Chickering & Z. F. Gamson (eds.), *Applying the seven principles for good practice in undergraduate education*. New directions for teaching and learning, 47, (pp 13-25), San Francisco, CA: Jossey-Bass.

Thorpe, E. T. (1997). *Changes in teaching behavior and teacher attitudes toward computer technology: A grounded theory*. Unpublished doctoral dissertation, Texas A&M University, Texas.

US News & world Report (2004, April). America's best graduate schools 2005. *Retrieved May 9, 2004, from* http://www.usnews.com/usnews/edu/grad/rankings/edu/brief/edurank_brief.php

Vannatta, R. A., & Beyerbach, B. (2000). Facilitating a Constructivist Vision of Technology Integration Among Education Faculty and Preservice Teachers. *Journal of Research on Computing in Education, 33* (2), 132-149.

Wang Y. & Holthanus, P., (1997). *Student teachers' computer use during practicum*. Washington DC: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED 409879).

West, G. B. (1999). Teaching and technology in higher education: Changes and challenges. *Adult Learning*, 10(4), 16-18.

White, C. (1999). It's not just another new thing: Technology as a transformative innovation for social studies teacher education. *Journal of Technology and Teacher Education, 7*(1), 3-12.

Winegar, M. L., (2000). *An exploration of seven principles for good practice in Web-based courses*. Unpublished doctoral dissertation, The University of South Dakota, South Dakota.

Vita

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